

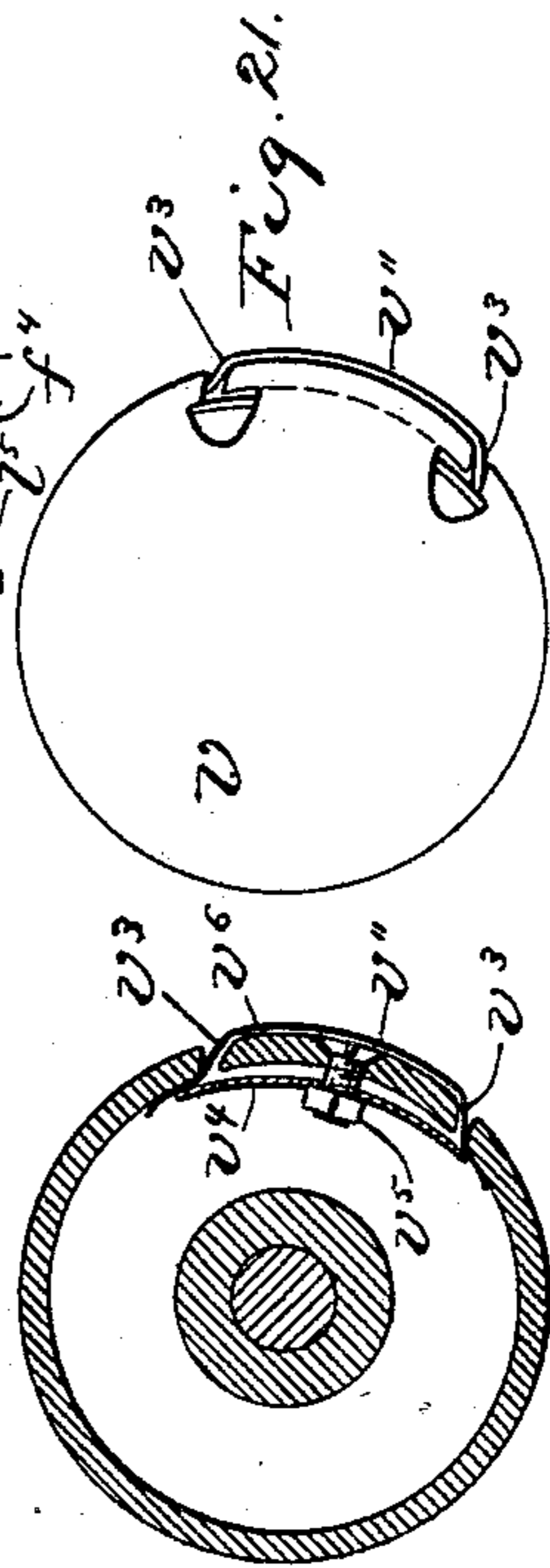
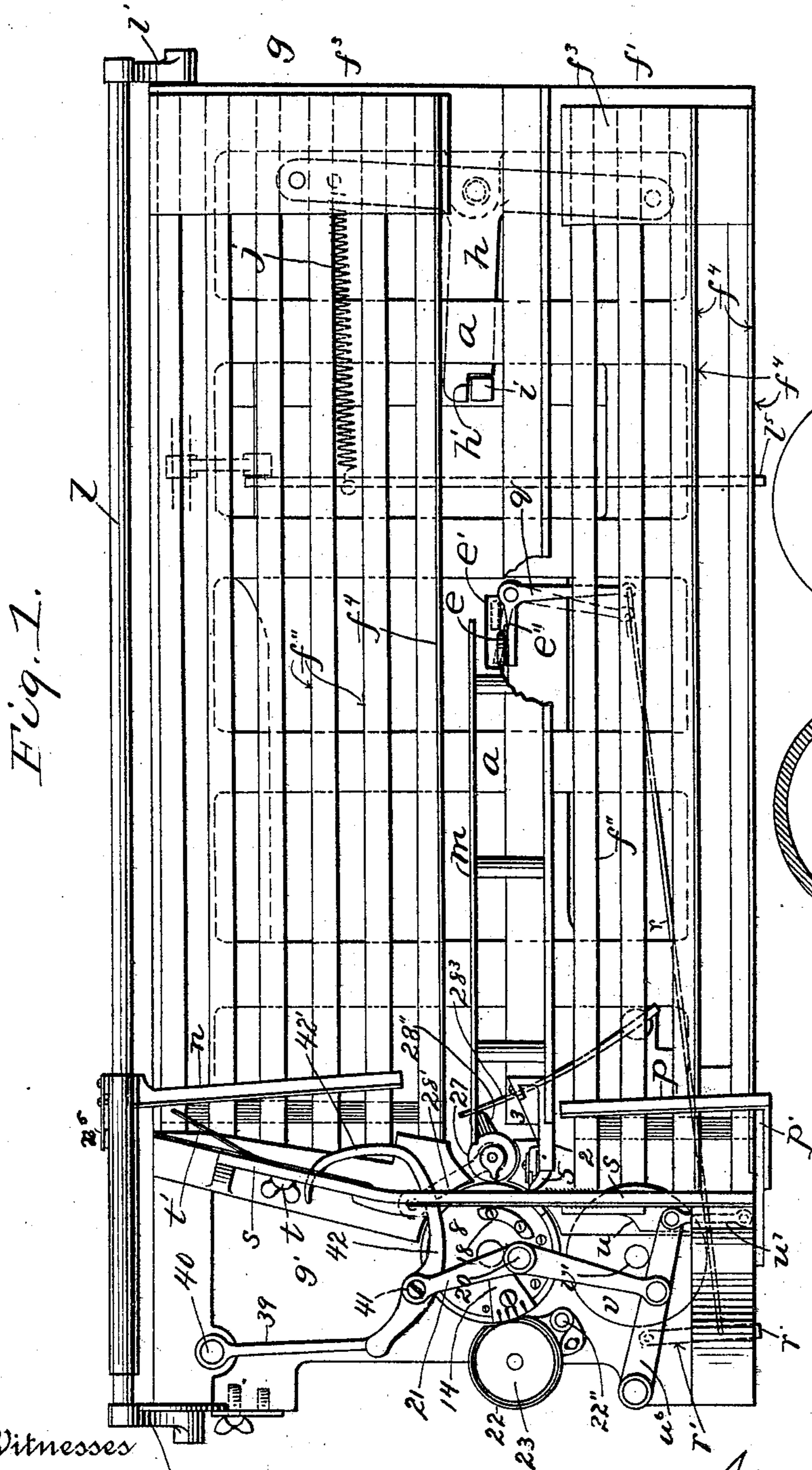
(No Model.)

7 Sheets—Sheet 1.

W. BARRY.
POSTAL MACHINE.

No. 585,076.

Patented June 22, 1897.



Witnesses
 Francis M. Barry.
 Francis L. Barry.

Inventor
William Barry
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Attorney

(No Model.)

7 Sheets—Sheet 2.

W. BARRY.
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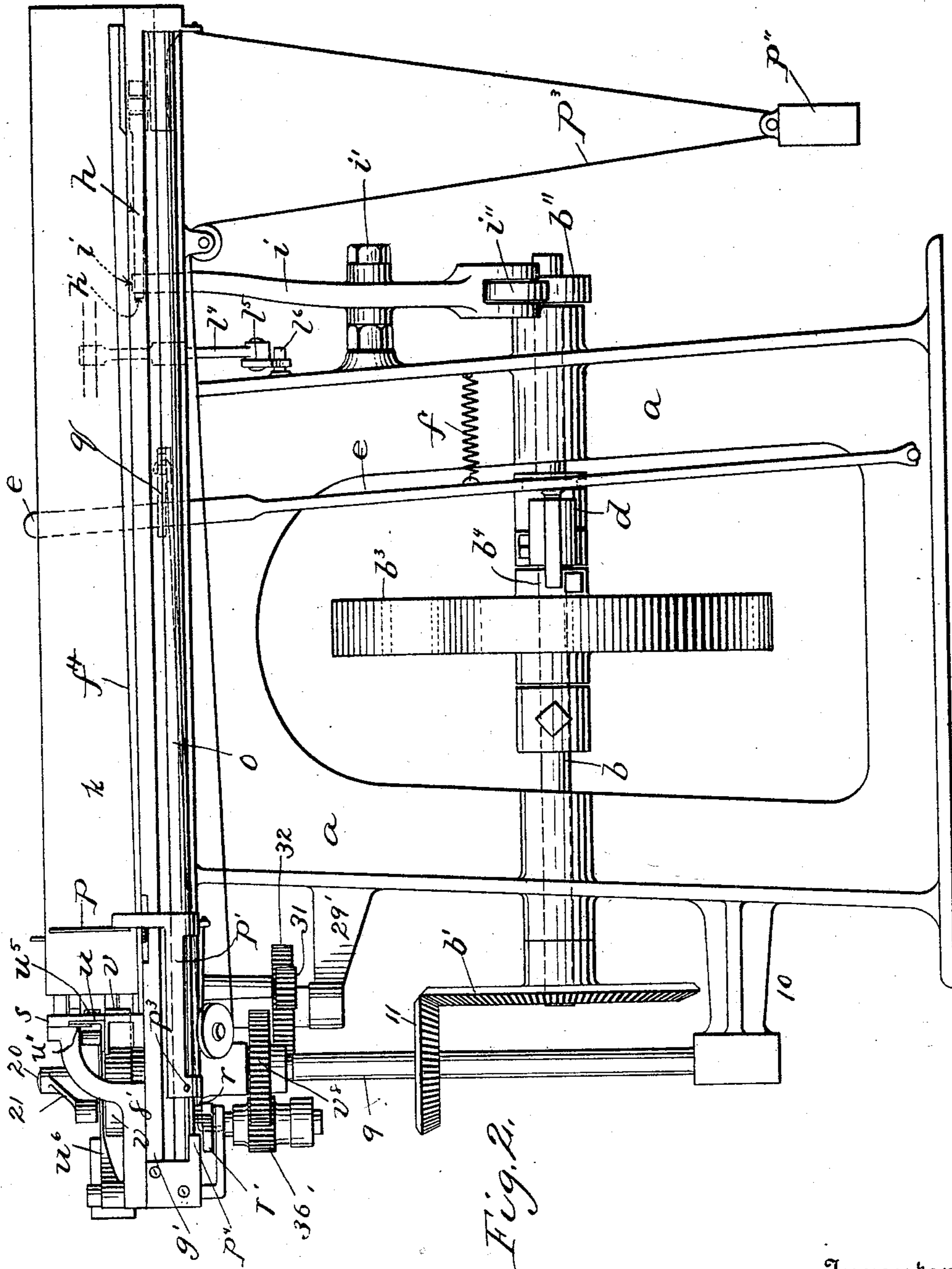


Fig. 2.

Witnesses

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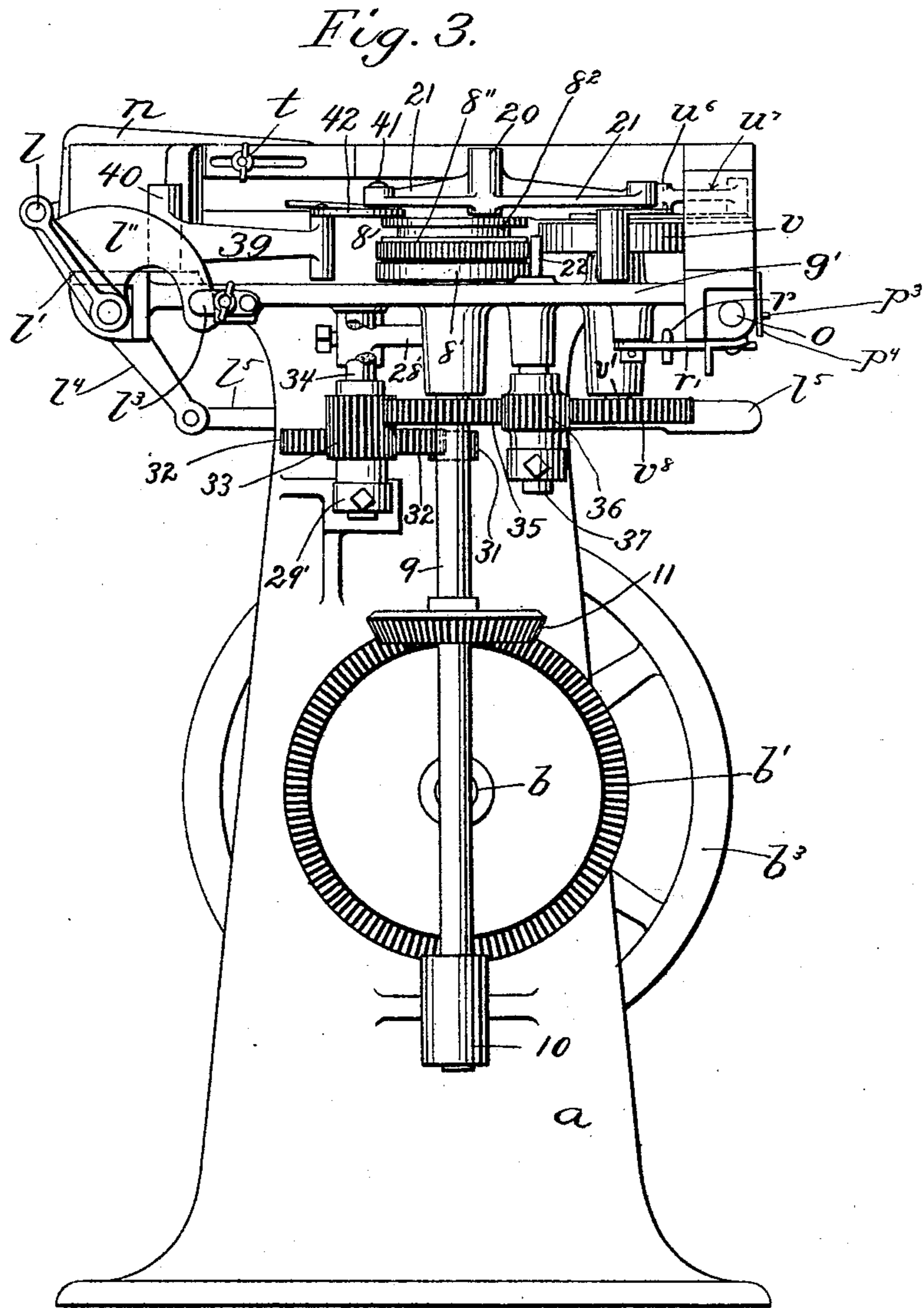
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7 Sheets—Sheet 3.

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Patented June 22, 1897.



Witnesses

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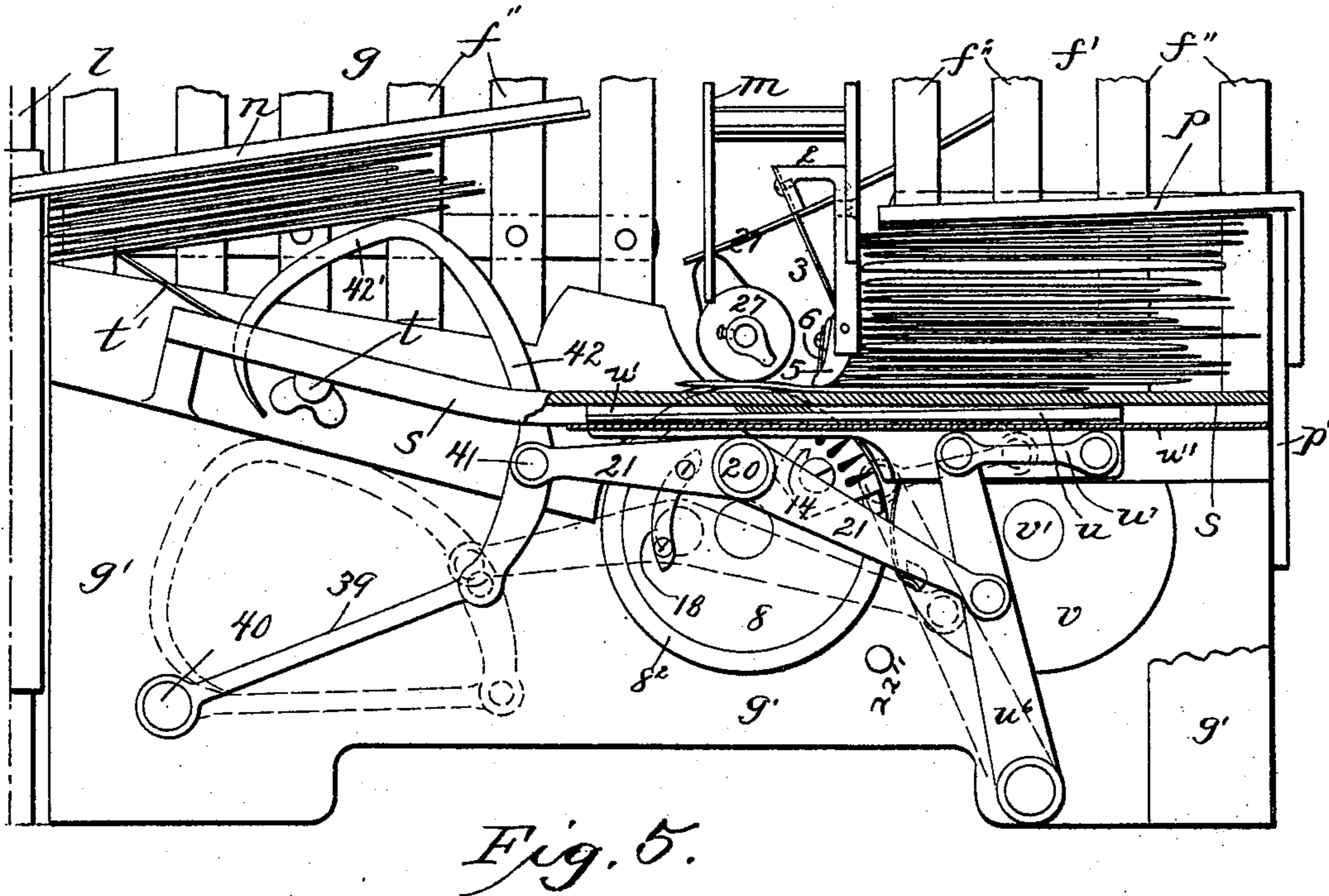
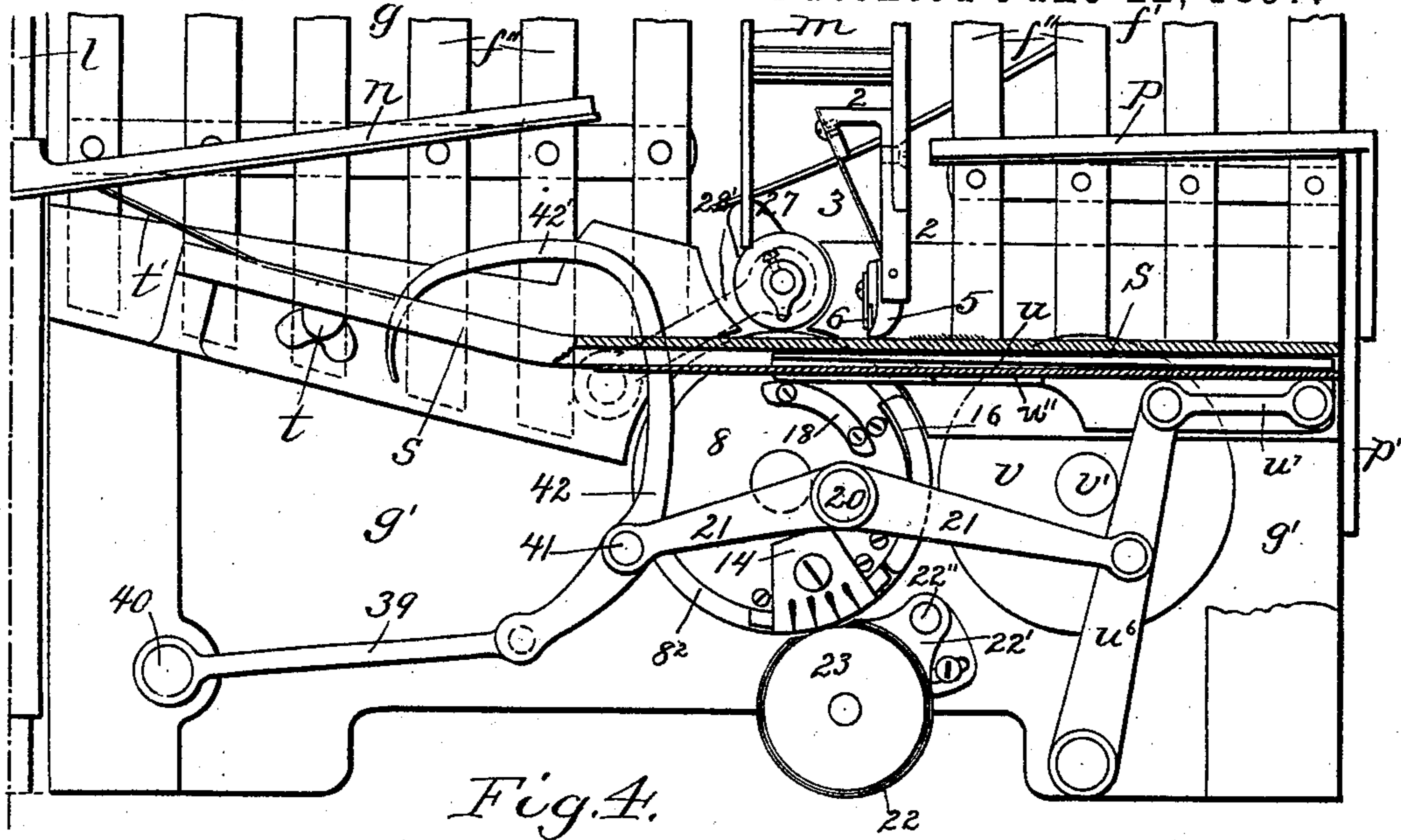
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7 Sheets—Sheet 4.

W. BARRY.
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No. 585,076.

Patented June 22, 1897.



Witnesses
C. L. Burdine,
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(No Model.)

7 Sheets—Sheet 5.

W. BARRY.
POSTAL MACHINE.

No. 585,076.

Patented June 22, 1897.

Fig. 6.

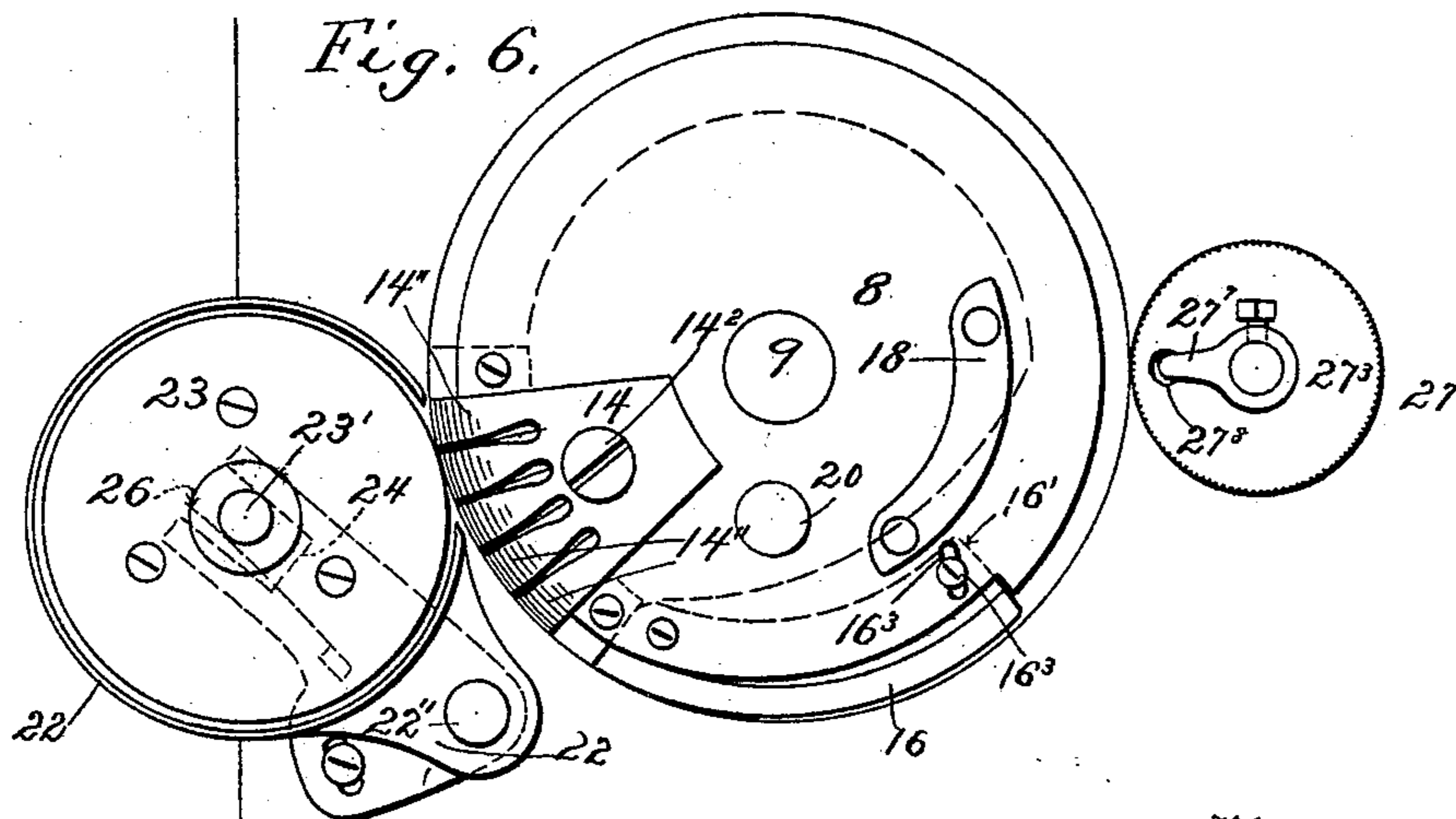


Fig. 7.

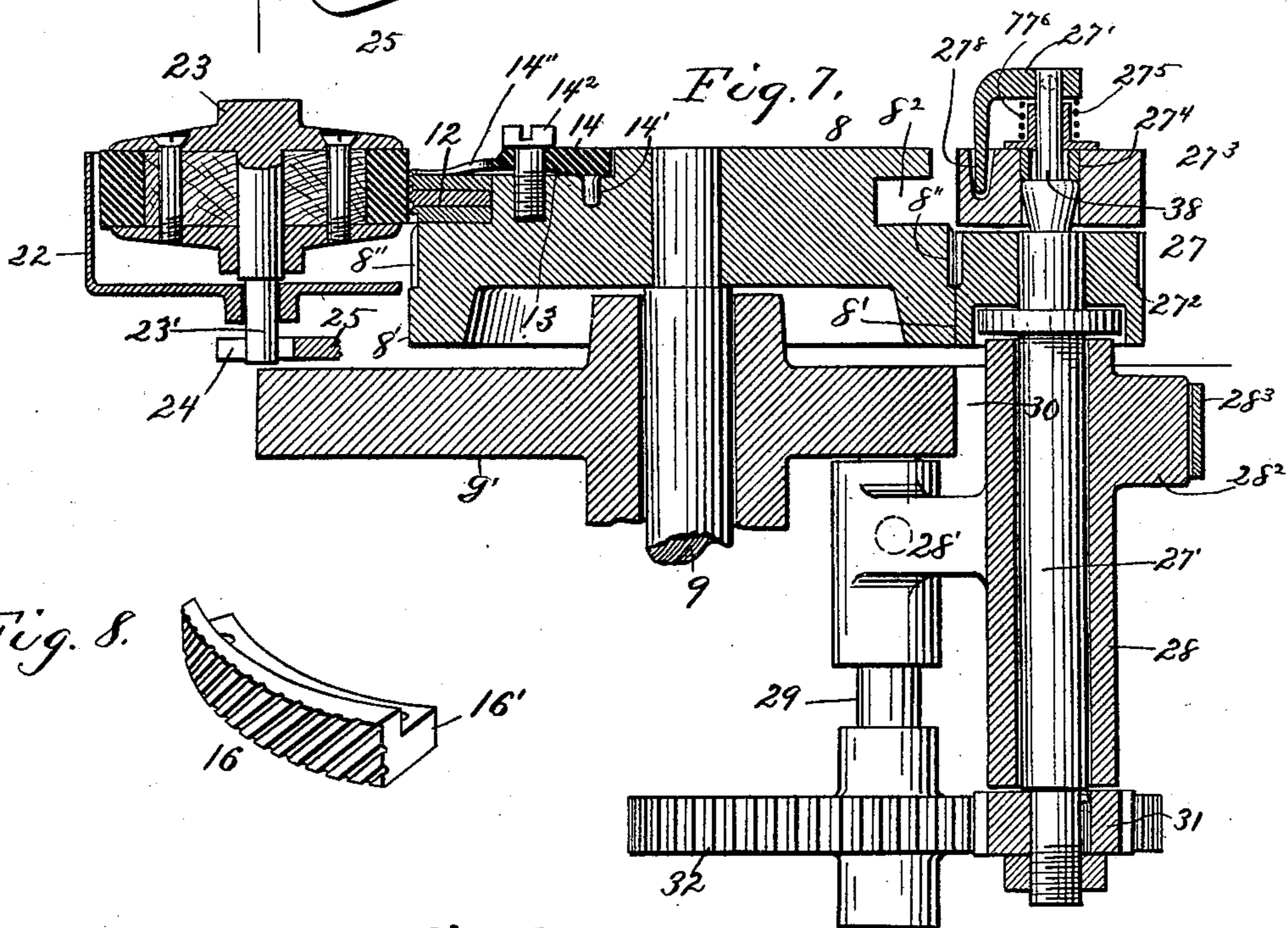


Fig. 8.

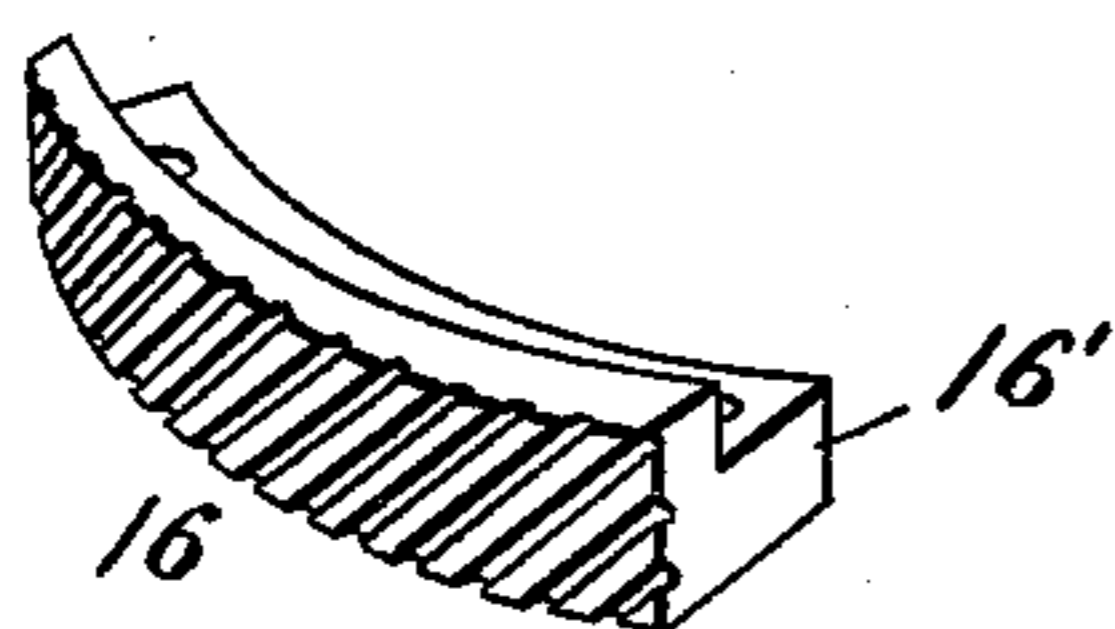


Fig. 10.

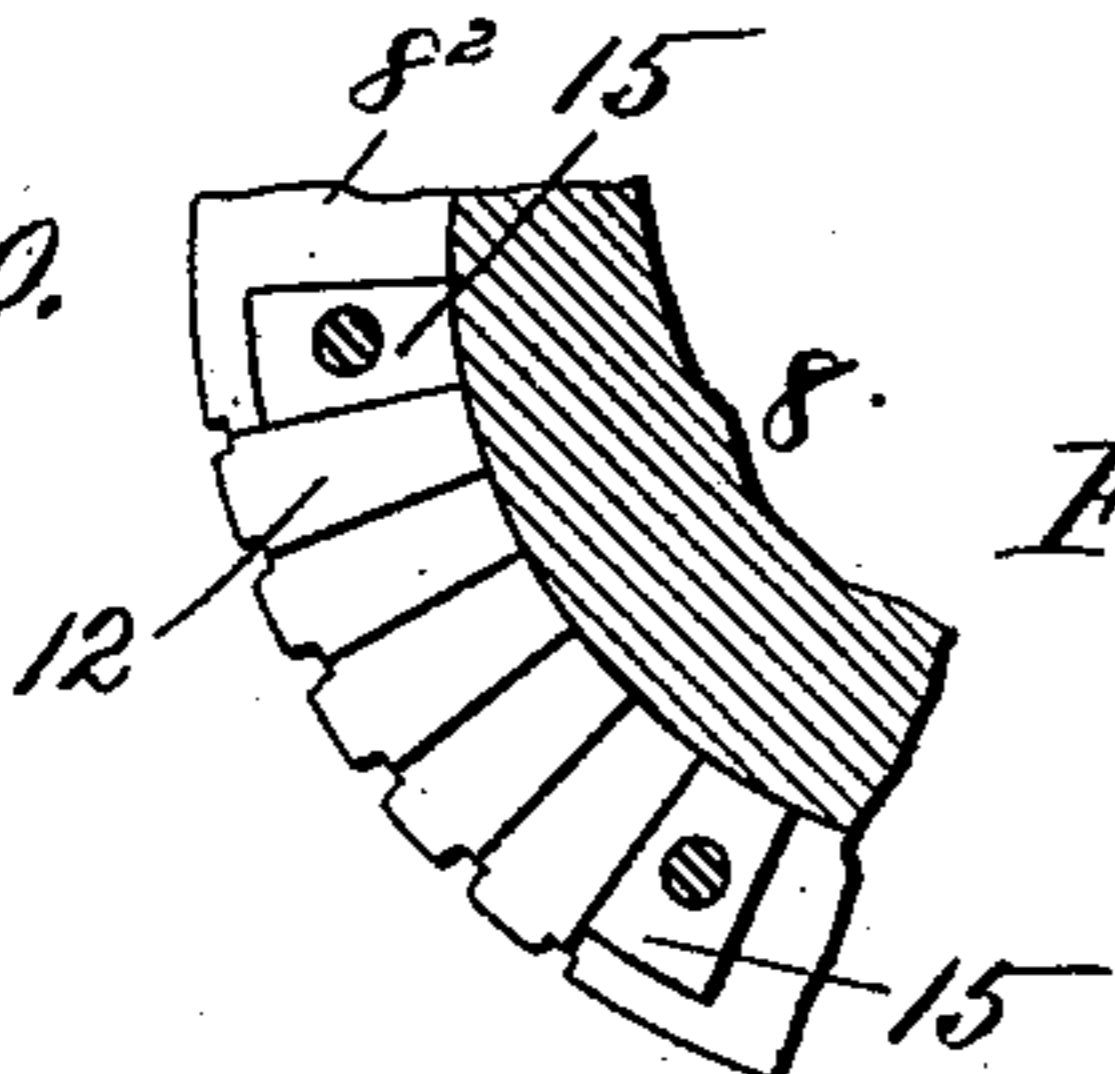
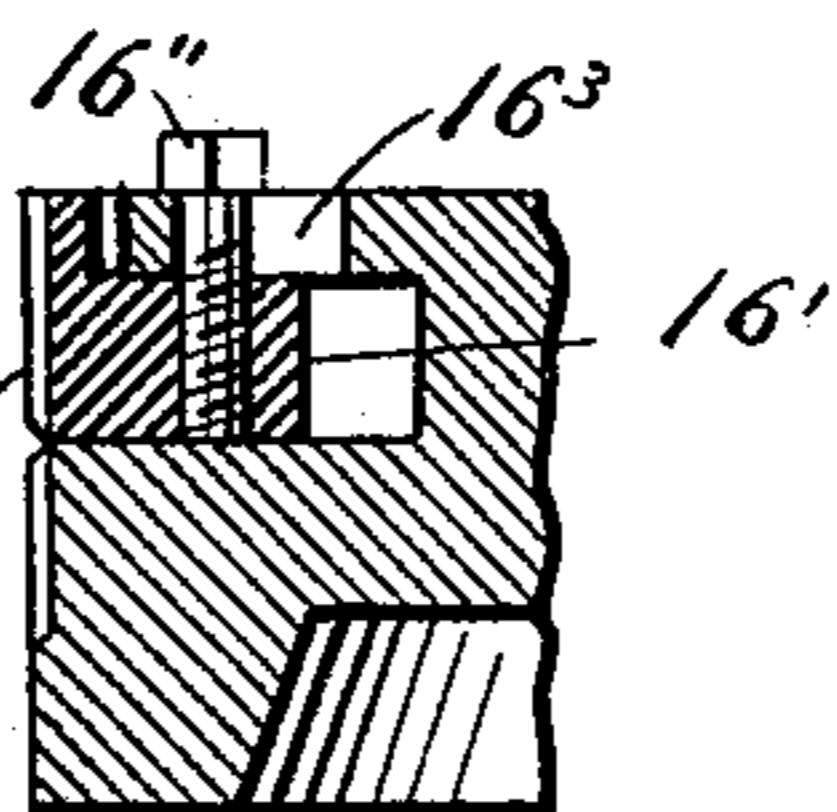


Fig. 9.



Witnesses

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(No Model.)

7 Sheets—Sheet 6.

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Fig. 11.

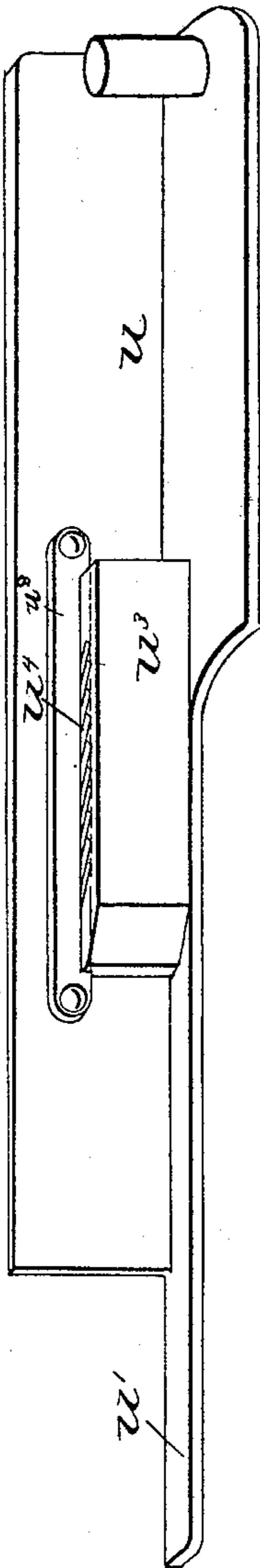


Fig. 12.

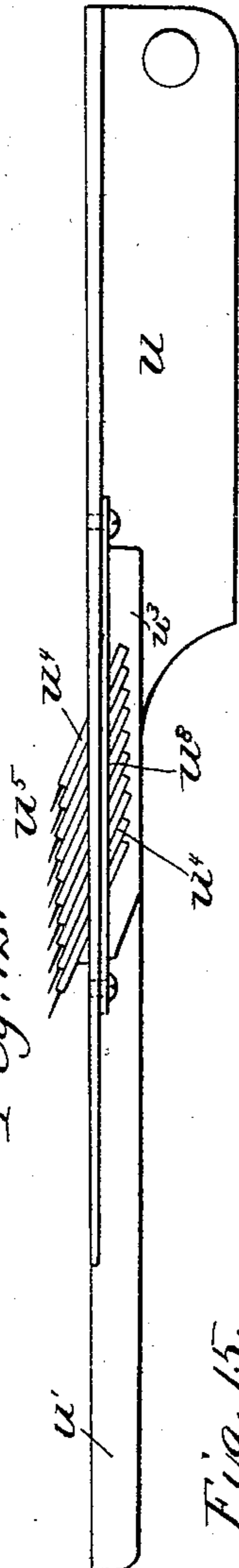


Fig. 13.

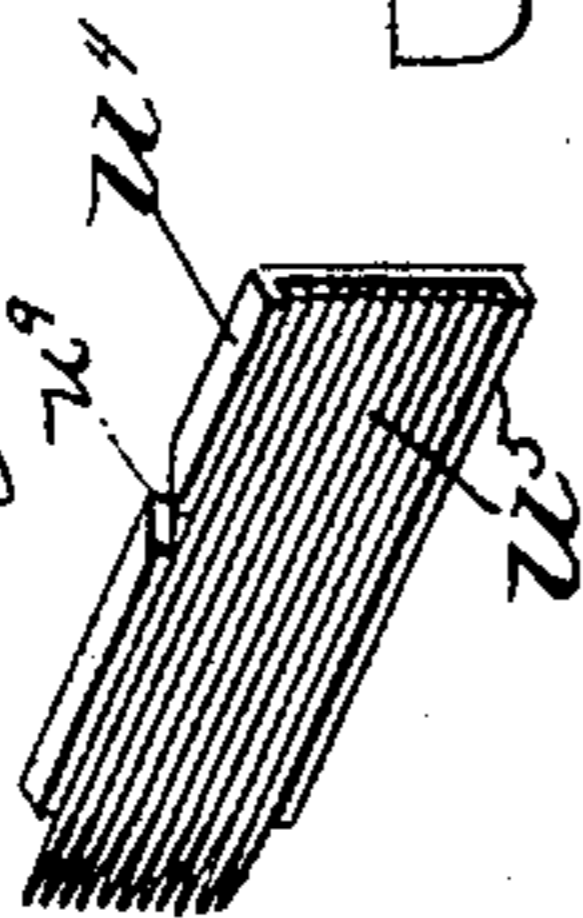


Fig. 15.

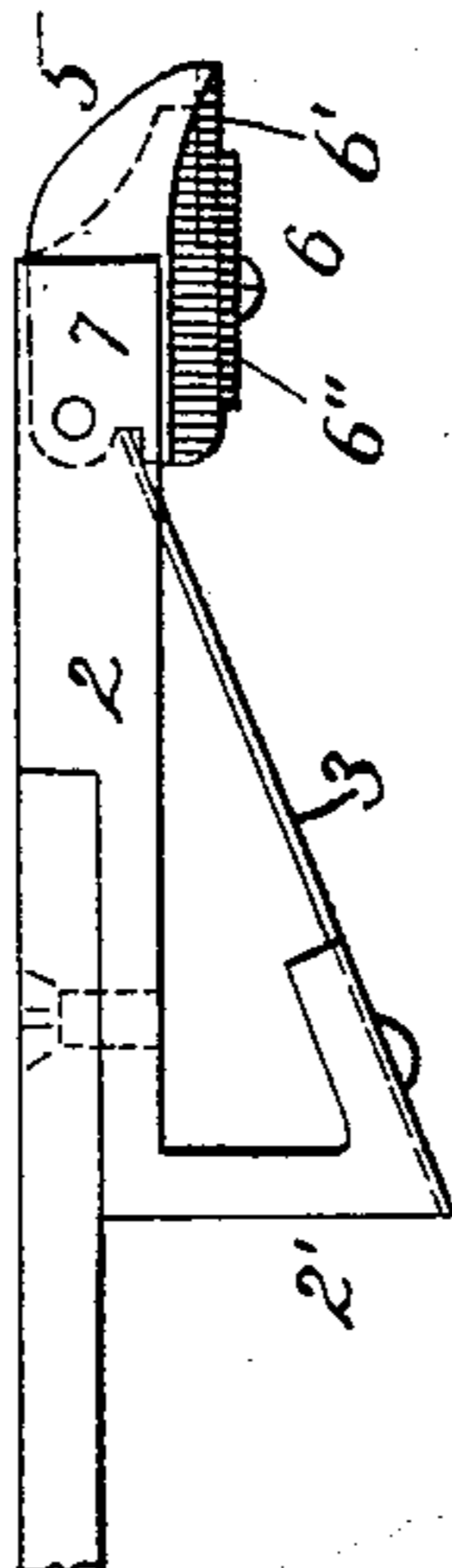


Fig. 18.

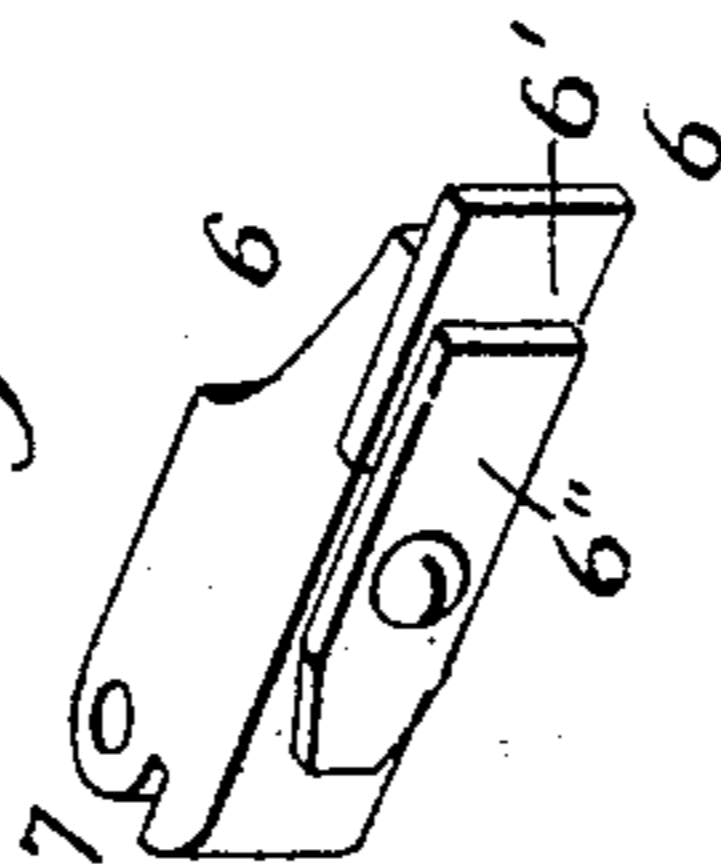


Fig. 17.

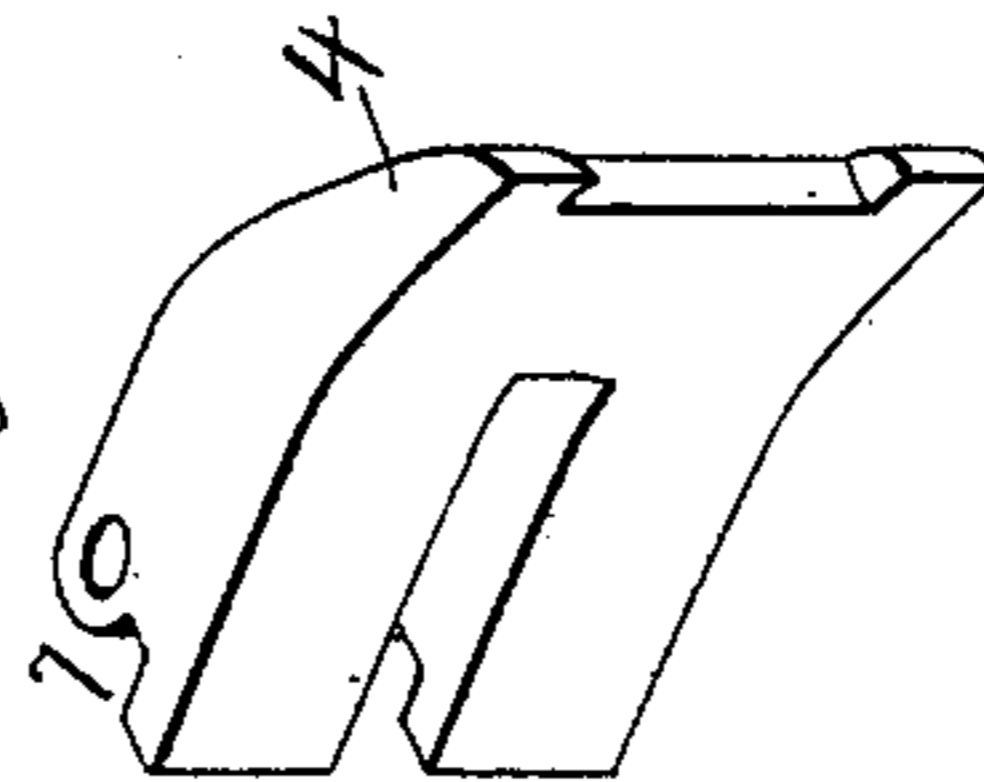


Fig. 19.

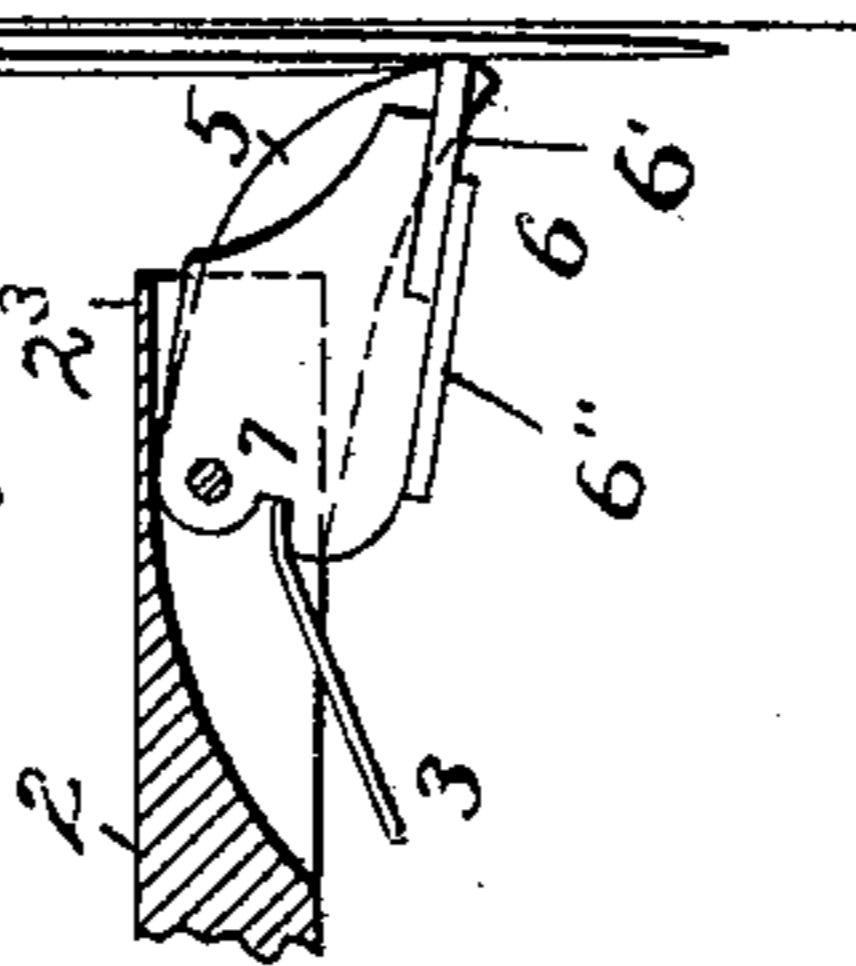


Fig. 16.

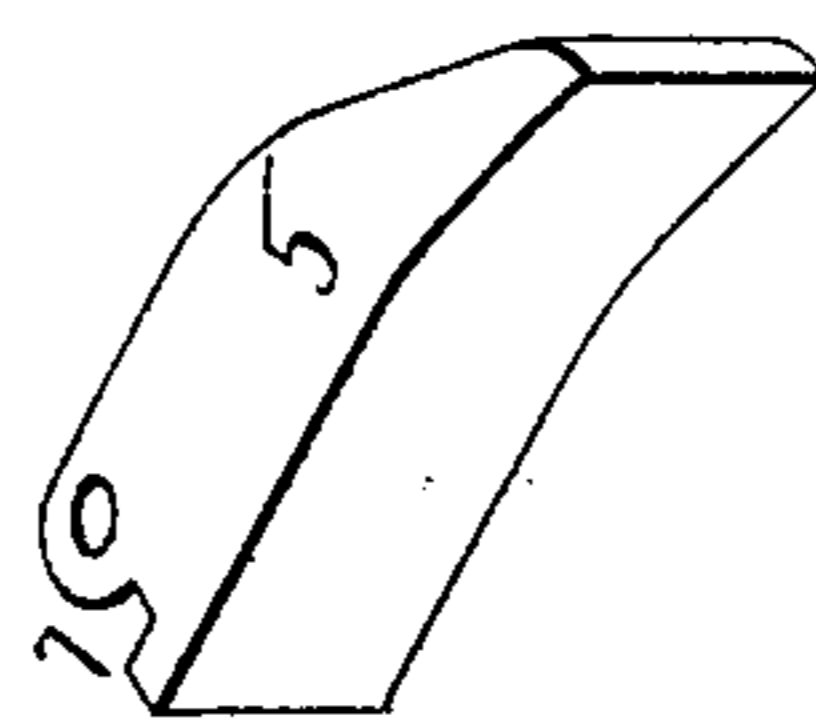
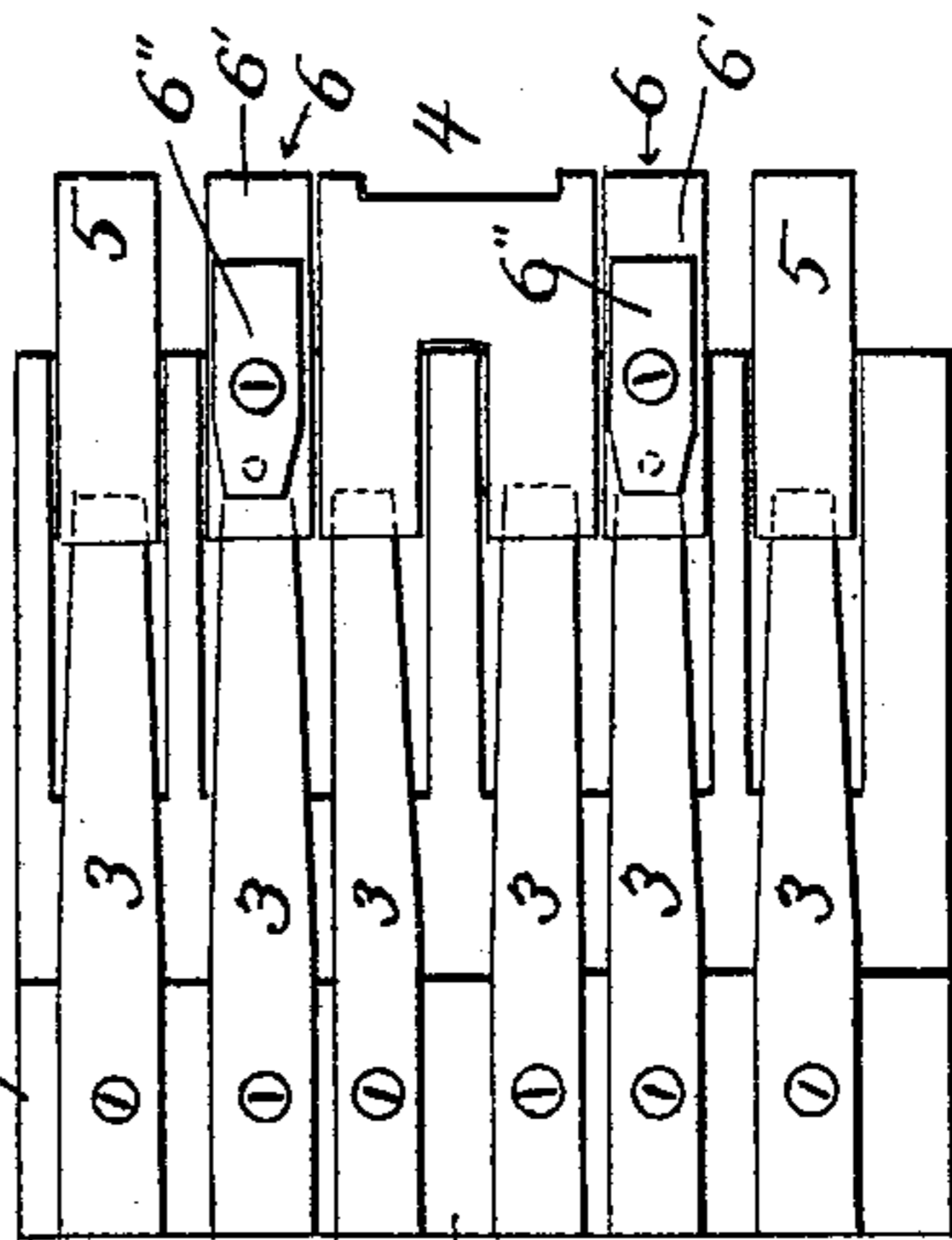


Fig. 14.



Witnesses
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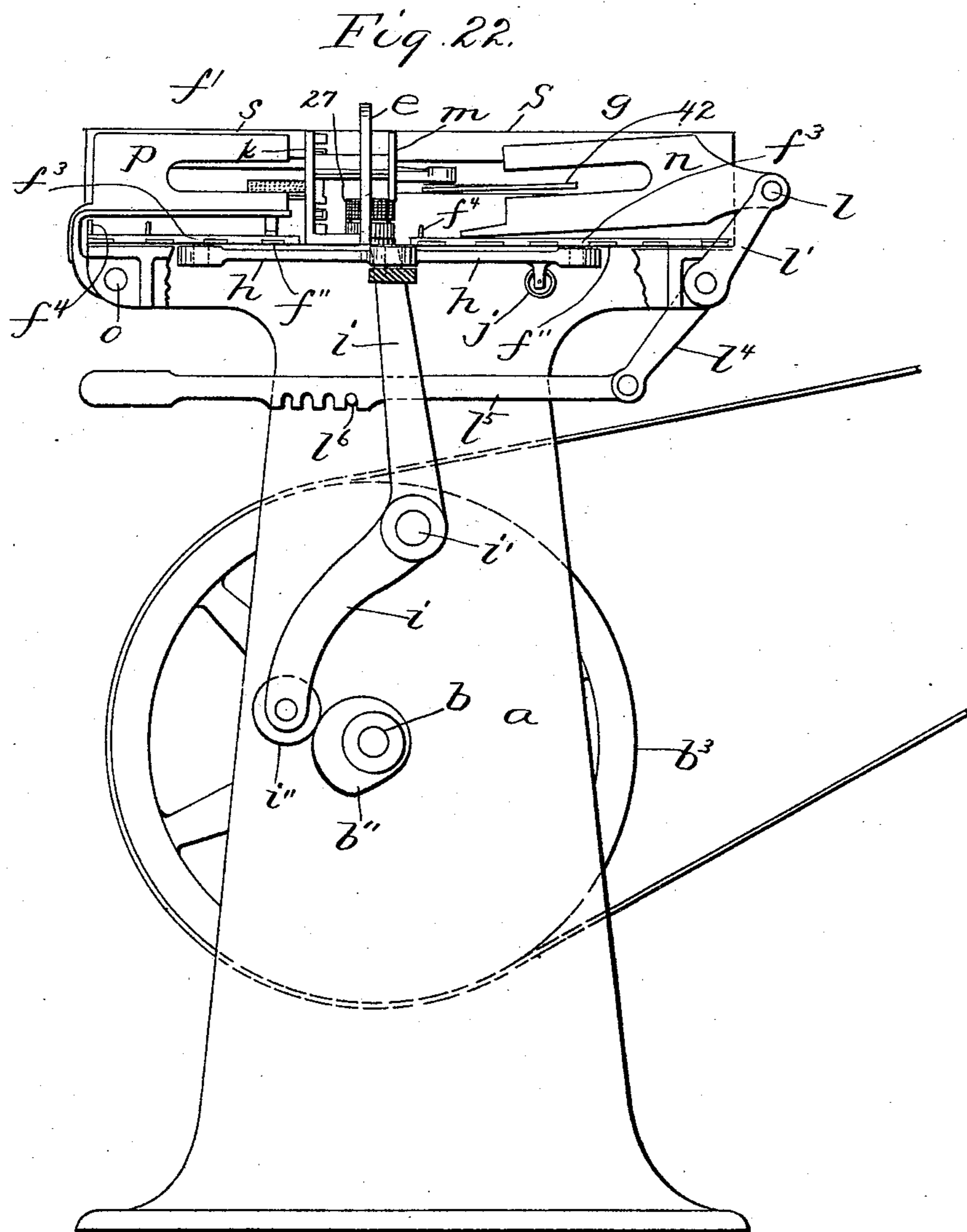
(No Model.)

7 Sheets—Sheet 7.

W. BARRY.
POSTAL MACHINE.

No. 585,076.

Patented June 22, 1897.



Attest
C. C. Burdine
Kathleen Barry

Inventor
William Barry.
by Herbert S. Peck
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM BARRY, OF SYRACUSE, NEW YORK.

POSTAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 585,076, dated June 22, 1897.

Application filed September 14, 1895. Serial No. 562,538. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BARRY, a citizen of the United States, residing at Syracuse, county of Onondaga, State of New York, have invented certain new and useful Improvements in Postal Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to use the same, reference being made to the accompanying drawings and to the letters and figures of reference thereon.

This invention relates to certain improvements in postmarking-machines.

The object of the invention is to provide an improved postmarking-machine exceedingly efficient in action in carrying the mass of letters up to the feeding mechanism, in separating the letters, so that they pass one at a time to the printing mechanism and each will receive its proper mark and be passed into the receiving-way and properly stacked.

A further object of the invention is to provide an improved postmarking-machine capable of accurately passing the letters through a printing mechanism and placing the proper imprint thereon, which shall be simple and durable in construction, and which can be depended on to perform its functions without constant repair and adjustment, and which is so constructed and arranged that if repair or renewal is necessary it can be made quickly and easily, and which is without those intricate and delicate mechanisms which render some machines necessarily subject to great wear and strain, requiring constant expert attention, renewal, and repair and consequent great cost of maintenance, whereby the actual capacity and running time of such machines are greatly reduced because of their enforced idleness when undergoing such repair and adjustment, possibly just at the time they are most needed for performing their official duties.

A further object of the invention is to provide an improved postmarking-machine capable of receiving a large number of letters at once and of automatically feeding them to a feeder which carries the letters separately to a printing mechanism from which they are passed to and properly stacked in a receiv-

ing-way, and which shall have its actual working parts simple in construction and so arranged and located and combined as to be easily accessible and renewable without difficulty or requiring extensive adjustment, time, or removal of other parts or necessarily expert operators or special tools, and which shall be so formed, located, arranged, and combined as not to be subjected to excessive and rapid wear and consequent short life, and shall have a minimum number of parts in proportion to the functions and operations accomplished by the machine.

A further object of the invention is to provide an improved postmarking-machine having an elongated receiving-way capable of receiving and feeding forwardly a large number of letters, with improved automatic mechanism for throwing the machine out of gear with its driver or of stopping the machine when all of the letters have been fed from said way.

A further object of the invention is to provide an improved postmarking-machine having its reciprocating feeder carrying the letters separately to the printing mechanism, and its stacker, which properly packs the letters in the receiving-way, pivotally joined by connecting means eccentrically joined to and properly swung by a rotary wheel, as the printing-wheel.

A further object of the invention is to provide a postmarking-machine having a reciprocating feeder to carry the letters separately from the feedway to the printing mechanism, with an improved auxiliary rotary feeding device to assist the reciprocating feeder in overcoming the inertia of each letter and in starting it independently of the other letters in the feedway on its movement from the feedway to the printing mechanism.

A further object of the invention is to provide an improved construction and formation of reciprocating feeder and an improved manner of operating and controlling the same, so as to increase the general effectiveness and durability of the feeder and to insure its accuracy in properly taking hold of and carrying each letter in the desired sequence.

A further object of the invention is to provide a reciprocating feeder timed to operate properly in unison with the printing-wheel

to present the letter to the printing-surface of the wheel, and which shall be forced in by the printing-wheel intermittingly against the letter about to be carried to said wheel, so as to properly grasp and feed said letter at the required moment.

A further object of the invention is to provide an improved printing-roll simple and durable in construction, with an improved manner of holding and permitting ready and easy insertion or withdrawal of the printing-characters, and so that the printing-characters can be properly inked without daubing the remainder of the surface of the roll or depositing the ink on the impression-roll.

A further object of the invention is to provide a postmarking-machine with a letter-way having an improved swinging adjustable side bar, so that the width of the way can be easily varied to accomodate letters of different sizes.

A further object of the invention is to provide improved means at the receiving end of the receiving-way, so that the letters will be so guided and directed and held as to permit ready entrance and proper packing of the letters discharged from the printing mechanism in the receiving-way.

A further object of the invention is to provide improvements in details of construction and arrangements and combinations of parts whereby a highly-efficient postmarking-machine is produced.

With these and other objects in view the invention consists in certain novel features of construction and in combinations and arrangements of parts more fully and particularly described and pointed out hereinafter.

Referring to the accompanying drawings, Figure 1 is a top plan view, with portions broken away, of a machine constructed in accordance with my invention. Fig. 2 is a side elevation thereof from the side of the feed-way. Fig. 3 is a front elevation thereof with the inker removed. Figs. 4 and 5 are detail enlarged top plan views of the front portion of the machine, showing the parts in different positions and Fig. 5 showing the parts in the act of operating the letters. Fig. 6 is a detail top plan, enlarged, of the inker, printing and impression rolls, dotted lines showing the inker-holder and the adaptability of the stamp-printing portion of radial adjustment. Fig. 7 is a detail vertical longitudinal section through the inker, printing-roll, impression-roll, and portions of the driving-gears, shafts, and supporting means of these parts. Fig. 8 is a detail perspective of the printing-character for cancelling the stamps. Fig. 9 is a detail section through a portion of the printing-roll, showing said character of Fig. 8. Fig. 10 is a detail horizontal section through a portion of the printing-roll, showing a horizontal section of the printing-type therein. Fig. 11 is a detail perspective of the reciprocating feeder-carrier, showing the feeder-block. Fig.

12 is a top plan of the construction of Fig. 11. Fig. 13 is a detail perspective of one of the plates and row of needles from which the feeder-block is built up. Fig. 14 is a rear elevation of the separator-fingers and the supporting-frame. Fig. 15 is a top plan of the construction of Fig. 14. Figs. 16, 17, and 18 are detail perspective views of the different forms of separator-fingers. Fig. 19 is a detail sectional top plan of two separator-fingers acting on two letters to show the coöperation of the two forms of fingers. Fig. 20 is a horizontal section through the auxiliary feed-roll. Fig. 21 is a top plan view thereof. Fig. 22 is a rear end view of the machine with the rear ends of the letter-ways broken away.

In the drawings the reference-letter *a* indicates the supporting frame or standard of the machine, suitably formed to rest on and, if desired, be secured to the floor and extend upwardly and a suitable distance therefrom to the working parts and beds of the machine. This frame can, if desired, be cast in one piece, as shown in the drawings, although of course I do not limit myself to any peculiar frame or manner of constructing the same. At its upper end the frame is provided with suitable lateral arms or portions usually arranged in a horizontal position to support the letter-ways and working parts of the machine.

b is the drive-shaft, extending horizontally through and beyond the two vertical legs of the frame and arranged beneath the letter-ways and working parts of the machine. Suitable bearings for this shaft are formed in the said vertical leg portions of the frame, and the front end of the shaft has the large bevel-gear *b'*, while the rear end thereof has a small cam *b''* for the purpose hereinafter set forth.

b³ is a drive-pulley to which the power to run the entire machine is applied from any suitable source. This drive-pulley is mounted loosely on the shaft, so that it can turn independently thereof, and is preferably arranged on the or approximately on the central portion of the shaft, with one end of its hub *b⁴* forming one member of a clutch, the opposite member of which is formed by a sleeve *d*. This sleeve *d* turns constantly with the shaft, but is formed to slide longitudinally thereon and mesh with said hub of the pulley, so as to throw the pulley into and out of gear with the shaft. This sliding clutch member can be controlled in any suitable manner, as by the vertical lever *e*, fulcrumed at its lower end to the lower portion of the frame and loosely fitting the clutch member, so as to move the same to and from the pulley, yet permit the parts to freely operate, and from thence extending up through a slot *e'* in a plate between the letter-ways and provided with a handle.

f is a spring acting on the lever to yieldingly hold the parts with the clutch disengaged, and *e''* is a catch or shoulder behind

which the lever is caught and held to hold the clutch locked with the pulley held to rotate the shaft.

Of course I do not limit myself to this peculiar arrangement of gearing and controlling means, but show and thus specifically describe it as a most simple and convenient means of operating and controlling the machine.

f' is the elongated horizontally-disposed letter-feedway, and g is the correspondingly elongated and disposed letter-receiving way arranged on the opposite side of the machine. These ways can be of any desired length to receive the desired number of letters, say several thousand, and said ways are preferably arranged parallel, although I do not limit myself to such arrangement. The framings of the ways are secured to and carried by the main frame of the machine and are usually fixed and stationary, while the floors on which the letters actually rest and engage are preferably, although not necessarily, composed of series of parallel bars f'' , extending longitudinally of the letter-ways and having a somewhat-slow forward-feeding longitudinal movement and a quick return movement.

The bars or rods forming the bed of each letter-way are suitably secured together at the rear ends of the ways, respectively, by suitable cross-plates f^3 , while the front ends of the bars are suitably confined to slide on the stationary table g across the front end of the machine.

A horizontally-swingable three-armed lever h is fulcrumed to the under side of the top framing of the machine beneath the letter-ways, with its two opposite arms pivoted to the end plates f^3 of the letter-way beds, respectively, while the third arm of the lever extends forwardly and is notched at h' on one side of its front end to receive the upper end of an upright lever i , fitting in the notch and suitably fulcrumed at i' between its ends to the frame, with its lower end provided with a roller i'' , running on the cam b'' , which has an abrupt break or drop.

j is a spring suitably acting on the three-armed lever to hold the upper end of the lever i in the notch and to hold the roller forced against said cam.

It will thus be readily understood that the parts are so arranged that the cam will rock the levers, so as to reciprocate the letter-way beds in opposite directions against the tension of said spring as the roller rides up on the cam, and when the roller drops suddenly off of the break of the cam the two floors will be quickly jerked or reciprocated in the opposite directions. The parts are so arranged that the slow forward movement of the feedway floor or bed constantly carries the letters forwardly therein, while the quick return is in the rearward direction and slides under the letters without drawing them back. In the receiving-way the slow-feeding movement is toward the rear to carry the letters back

and the quick non-feeding return toward the front. One or more of the bars at the outer portion of the letter-feedway and one or more of the bars at the inner portion of the receiving-way have raised edges f^4 along their longitudinal sides gradually inclined downwardly from the rear ends of said bars to the front ends thereof, so that the letters can ride up thereon and be held from movement away from the guides of the letter-ways, the letters in the feedway being held with their outer ends raised, so as to press their inner ends in against the longitudinal guide-plate k along the inner edge of the way, while the letters in the receiving-way have their inner ends raised, so that the letters are held or inclined out against the longitudinal guide l at the outer side of the receiving-way.

m is a guide at the inner side of the receiving-way.

The outer side of the feedway can be left open, as shown, so that the letters in large numbers can be easily inserted therein without reference to the length of each letter.

The longitudinal guide l at the outer side of the receiving-way is preferably adjustable bodily in and out, so as to increase or diminish the width of the receiving-way, and this guide is preferably in the form of a long rod secured to lateral brackets l' , pivoted at their lower ends, respectively, to opposite ends of the machine-framing, so that the brackets swing on their respective pivots and carry the guide-rod away from or toward the bed.

If desired, a curved plate or arm l'' can be secured to an arm l' at one end of the machine and a clamp and guide l^3 be provided to act thereon and hold the guide-rod l at the desired position or to guide the same. I do not wish to limit myself to the employment of this clamping means, as I prefer to operate said guide by depending arm l^4 from the guide, having the loose handle or lever l^5 joined to the lower end of said arm and extending beneath the letter-ways to the opposite side thereof, where it can be easily and conveniently grasped by the operator and moved longitudinally to swing the guide-rod. The under side of this handle or lever can be notched, as shown in Fig. 22, and a pin l^6 provided to catch in the notches and hold the parts in the desired adjustment. The operator hence has merely to raise the lever from the pin and move the lever and then drop so that the desired notch receives the pin.

n is the follower in the receiving-way to hold the mass of letters together. The follower extends transversely of the way, preferably at an angle, and its guiding and carrying slide-sleeve is arranged on the rod l and provided with a friction-finger n^5 , bearing on the guide-rod l with sufficient friction thereon to enable the follower to hold the letters in the receiving-way in the desired upright position.

o is a stationary rod arranged longitudinally beneath the outer edge of the feedway

and suitably secured to the framework at the ends of the machine. The transverse follower p in the feedway has a sleeve p' , carrying it and confined to slide on said rod o .
 5 A weight p'' is hung from suitable flexible connections p^3 and connected to said slide p' to constantly press and move the follower p in the feedway toward the front end thereof, so as to constantly hold the letters in said way
 10 together and in their upright positions as the mass of letters is fed and pressed forwardly by the feeding bed or floor and so that when the number of letters in the way is reduced to a few to properly carry them up to the
 15 front end of the way to be properly grasped by the feeder.

p^3 is a pin on the slide p' , arranged to move along the upper edge of projection p^4 to hold the follower from swinging.

20 Suitable mechanism is provided to be automatically operated by said feedway-follower when it arrives at its limit of forward movement and the last letter is carried from the feedway, whereby the machine is automatically thrown out of gear with its driver and
 25 stopped. I do not wish to limit myself to any particular mechanism for accomplishing this function, but a simple and suitable combination for the purpose comprises a horizontally-movable elbow-lever q , suitably fulcrumed to the under side of the top framing, with its inwardly-moving arm normally extending in front of the catch or shoulder e'' ,
 30 so that when the controlling-lever e is caught by said catch the lever presses said trip-lever q to one side. The opposite end of the trip-lever has a forwardly-extending connection r beneath the feedway to the free end of a short horizontally-swinging lever r' , fulcrumed at one end to the under side of the
 40 front table of the machine, with its free end arranged in the path of the sleeve carrying the follower of the feedway, so that said sleeve will strike said short lever as the last
 45 letter leaves the feedway and move said short lever just sufficiently to cause the elbow trip-lever to push the controlling-lever from the notch e'' and permit the spring of the controlling-lever to swing the same and throw the
 50 machine out of gear and stop the same. When the feedway is again filled with letters, the operator has merely to grasp the upper end of the controlling-lever and swing it forwardly and catch it behind the shoulder e'' .

55 s is a vertical wall extending transversely across the front end of the feedway and against which the letters in the feedway are pressed. This wall is extended across in front of the receiving-way and is inclined rearwardly toward the outer side of the receiving-way approximately as shown, so that the letters entering the receiving-way along its front wall have their front ends in the direction of movement deflected inwardly, thereby leaving ample space at the inlet side of the receiving-way for the succeeding letters, so that
 65 there will be no crowding or doubling up of

the letters because of excessive pressure in the receiving-way against their entrance. The outer end of the wall at the front end of the receiving-way is usually longitudinally slotted at its outer portion to receive and permit longitudinal adjustment of a clamping-screw t , carrying a spring-plate t' at the rear side of said wall and extending from said
 75 clamping and adjusting screw means toward the outer edge of the receiving-way and springing inwardly toward the rear end thereof, so as to hold up the mass of letters in the way and press them rearwardly. This spring
 80 can be adjusted transversely of the way as circumstances dictate.

The front wall of the letter-ways is longitudinally slotted at the front end of the feedway and at the space between said ways and in
 85 front of the receiving-way. At the front end of the feedway and in front of said wall and just beneath the slot a suitable ledge or slide-way is provided for the reciprocating carrier carrying the feeder. This carrier u is elongated, usually, although not necessarily, of
 90 greater length than the width of the feedway, and formed with the horizontal portion or flange sliding on said ledge or slideway provided with the forwardly-extending nose u'
 95 at its inner or front end in the direction of feeding stroke, and the vertical fin or flange along the inner or rear longitudinal edge of the horizontal portion and moving and confined in a space between the front wall and
 100 a plate u'' , arranged parallel therewith, said space or guideway thus formed being of greater width than the thickness of said vertical portion of the carrier, so that a slight in-and-out swing or play of the carrier is permitted toward and from the inner or front
 105 end of the feedway. The feeder proper or biting surface comprises a suitable holder or block u^3 at the front side of the vertical portion of the carrier, resting on the horizontal
 110 part thereof and extending through an opening or slot in the vertical portion and through the opening in the front wall to engage and carry the letters forced against the front wall. This holder is removably secured to the carrier
 115 in any suitable manner. This holder has suitably secured therein a series of parallel plates u^4 , all set on edge and inclined inwardly and toward the receiving-way. Each plate has its longitudinal edges turned in slightly, and on
 120 the face of the plate between the edges a layer or row of parallel needles u^5 is arranged with their points projecting slightly from the front ends of the plates. In making, the desired number of plates with the needles therein
 125 are properly clamped or held and the needle-points all aligned and extending from corresponding ends of the plates and constituting a surface of closely-arranged fine points. The plates and needles are then soldered together, and usually to the holder, so as to
 130 form a solid rigid mass having the surface of points at one edge all parallel and inclined. Fig. 13 shows one of these plates with the

closely-arranged series of needles thereon. By thus employing the series of plates each carrying a row of needles the feeder-block can be easily made, and when all the plates are clamped together parallel and inclined the front ends of the needles are braced against breaking by the front ends of the adjoining plates, as, for instance, more clearly seen in Fig. 12. The plates u^4 can have cross-slits u^9 to receive the plate u^8 , which fits in said slits of all the plates and is secured to holder u . This biting-surface of fine points extends through into the front end of the feedway, so as to take hold of the surface of the first letter in the way and carry it through the separator to the printing mechanism.

u^6 is a horizontally-swinging lever above the front end table of the machine and fulcrumed at its outer end thereto on a suitable raised pivot and extending inwardly from its pivot to the reciprocating carrier and loosely connected with the rear end thereof by the short pivotal link u^7 . This lever u^6 is coupled with the printing-wheel, as hereinafter described, so as to reciprocate said feed in proper sequence.

v is a horizontally-rotating feed-roll arranged on the front table of the machine beneath the feeder and feeder-operating devices and projecting through a slot in the front vertical wall into the front end of the feedway. This roll is mounted on a vertical shaft v' , suitably journaled in and extending beneath the table, and driven in a suitable manner, so that the portion of its periphery in the feedway and engaging the front letter therein will constantly rotate toward the printing mechanism and in the direction of feeding movement of the feeder. This roll has a friction-surface and is designed to assist the reciprocating feeder in quickly starting and carrying the letters from the way, so that there will not be too great strain on the paper of the letter-envelope where the feeder takes hold of it, and so that all liability of skipping and failure to feed will be avoided. Where the letters are wet and stuck together, this auxiliary feed is found of material advantage.

The auxiliary feeder, which acts in conjunction with the main feeder in starting each letter and in separating the same from those behind and which engages the letter at an intermediate portion, can also serve the important function of lining up the letters to the inner guide or side of the way, so that the main feeder can readily grasp the inner ends of the letters. Sometimes the postal clerks fail to push the inner ends of all of the letters up against the inner guide, and hence when such letters move up to the main feeder they might not be located so as to be engaged by said feeder, but by employing the auxiliary feeder such letters when presented to the feeders will be engaged by the auxiliary feeder and pushed inward, whereby their inner ends can be caught by the main feeder. The roller is

here shown with a somewhat protruding friction feeding-surface v'' at one point on its periphery, and the roller is timed to rotate so that this friction feeding-surface engages each letter in the way to assist in moving it as the reciprocating feeder takes hold of the letter.

Any suitable means or devices are provided to permit renewal or adjustment of the friction feeding-surface v'' . In Figs. 20 and 21 I show a simple and practical arrangement for this purpose, although many other devices might be employed and all would be within the scope of my invention, as I broadly claim an auxiliary feed for the reciprocating or other feeder. The roll is here shown hollow and open at the bottom, although closed at the top. Two radial slits $v^3 v^3$ are shown opening from the interior of the roll through the periphery thereof a distance apart equal to the width of the exposed friction-surface. Openings in the top of the roll are formed in inward continuation of said slits. The strip of flexible friction material v'' is stretched over the full width of the roll between said slits, with its ends passed into the interior of the roll through the slits. A spring clamping-plate v^4 is arranged within the roll with its ends clamping the ends of the strip against the interior of the roll. A clamping-bolt v^5 is passed in through the roll between said slits and through the spring-plate, with a nut on its inner end and its outer end provided with a cross-slit and countersunk. By unscrewing the nut the spring-plate is loosened and the flexible strip can be removed and new one inserted. The ends of the plate-spring can have upward extensions into the openings in the top of the roll. However, I do not limit myself to any peculiar construction of roll or feeding-surface or operating means, nor in fact necessarily to the employment of a roll. The letter-way guide-walls end a distance behind the front wall, and the separating device is provided to extend across this space and bear yieldingly against the front wall, so as to permit passage of one letter only at a time, so that one letter at a time will pass to the printing device. The separating device in this case comprises a series of fingers extending forwardly and held yieldingly against the front wall, so as to swing sufficiently to permit passage of single letters. In the present case five fingers are shown arranged in a vertical series.

2 is a suitable frame or carrier removably secured to the front end of the guide-wall of the feedway and extending forwardly in extension thereof. This frame preferably has a lateral extension $2'$ from its rear end toward the receiving-way, to which the rear ends of the respective plate-springs 3 are secured. The front end of this frame has the vertical series of horizontal slots extending in from its edge to receive and permit swing of the fingers. A large finger 4 is pivoted at the central portion of the inner end of the frame by having a slot at its rear end receiving and

mounted on one of the arms of the frame. This finger has a notch at its free end where it engages the front vertical wall to permit free passage of the reciprocating feeder and avoid all danger of the biting surface of said feeder engaging the said finger. The remaining fingers 5 5 and 6 6 fit in the slots of the frame and are pivoted to swing on pivots passed through the portions of the frame between the slots. Each finger has a notch 7 in rear of its pivot in which the ends of the respective plate-springs 3 fit so that the springs force the front free ends of the fingers toward the feedway and tightly but yieldingly against the front vertical wall. The large center finger preferably has two springs acting thereon. Thus when a letter passes along the front wall from the feedway said fingers are swung back from the front wall against the tension of their respective springs and bear against the rear face of the letters as they pass out of the feedway. Certain of these fingers, such as fingers 4 and 5 5, are curved forwardly and rearwardly to the front wall at their faces at the inner edge of the feedway and against the inner ends of the letters at the front end of said way. These broad convex faces press the end of each letter, when it engages the fingers, against the front wall and thereby hold said edge against doubling back under the resistance offered to its passage by the remaining fingers of the separator. Also these fingers press back the letters in the feedway immediately behind the letter engaged directly by the feed, so that the letter forced by the feed will be the only letter able to press back all the fingers and pass beyond them at each stroke of the feeder.

While the fingers 4 5 particularly perform the function of pressing the letters against the front wall to support them, the fingers 6 6 are particularly and peculiarly formed, preferably, with sharp edges to engage the front edges of all letters except the particular letter being fed, and thus most positively hold back the letters behind the letter being fed. These fingers 6 are concaved or so formed on their faces toward the feedway that the letter ends bearing against the other convexed fingers will not engage said fingers 6.

Each finger 6 has a flat hard-metal plate 6' adjustably secured to its rear face, with a squarely-cut-off end projecting forwardly from the finger to directly engage the front wall at such a point that the letter being fed will be pressed against the front wall by the rounded fingers before engaging said plates, and the pressure of the letters on the plates will swing back said fingers 6, and thus the sharp edge of each plate will rub along the rear side of the letter passing under the fingers and will engage and hold back the front edges of any letters behind which may be slightly stuck to or endeavoring to pass along with the letter being fed. Each hard-metal plate is held by a suitable clamp 6'', so that each plate can be reversed and turned four

times to present a sharp edge whenever an edge wears round, the plate being cut off square or at right angles at both ends and thus forms four sharp edges. The fingers are all preferably made of metal and are very durable, and by reason of the peculiar combination of fingers form a most simple and efficient separator and prevent "skipping" almost entirely, which is caused by more than one letter at a time being passed into the printing mechanism. These plates 6' are the only parts of the separator subjected to much wear, and they are capable of several reversings and can then be replaced easily and at a very small cost.

2³ is a stop limiting the inward swing of the separating-fingers. (See Fig. 19.)

The printing and impression rolls are arranged in the path of the letters from the feed to the receiving ways and immediately behind the separator at the opening from the feedway. The printing-roll 8 is arranged horizontally on the front table of the machine and in about the same horizontal plane as said auxiliary feed-roll, although this is not essential and I do not limit myself to such arrangement. The printing-roll is mounted on the upper end of a vertical shaft 9, extending down through a bearing in the top table and down in front of the gear on the front end of the main drive-shaft, and at its lower end is journaled in an arm 10, extending out from the lower part of the machine-frame. This shaft 9 has a horizontal bevel-gear 11 thereon meshing with the large bevel-gear on the main drive-shaft, and thereby driven therefrom in the proper direction.

The printing-roll preferably, although not necessarily, has its periphery divided into three different divisions or portions—viz., the lower smooth-faced division 8' around the wheel and here shown as a depending annular flange, the middle feeding annular division or portion 8'', which is vertically roughened, corrugated, or milled, substantially as shown, the roll being very slightly less in diameter at this portion than at the division 8', and the upper annularly recessed or grooved portion 8³, the upper wall of which is less in diameter than the remaining peripheries of the roll and which is designed to remain out of contact with the inking devices and the impression-roll and to receive the printing-characters for canceling the stamp and applying the postmark.

12 are the removable printing type or characters constituting the postmark and radially and removably inserted in a properly-recessed portion of the groove 8³, here shown as in parallel horizontal rows with the small type resting one on the other in vertical rows and the printing-faces of all type projecting slightly beyond the periphery of the roll. The top of the roll above the space occupied by the type is removed and recessed inwardly toward the center of the roll to form seat 13. A spring or yielding clamping-piece 14 is ar-

ranged radially of the roll removably in said seat and extending over the upper row of type. The inner end of the clamp-piece usually has a pin 14' on its under side loosely fitting in a socket in the roll at the bottom of said seat. The outer end of the clamp is formed into separate spring-fingers 14'', a finger being provided to bear on each type in the top row, respectively, a distance inwardly from the outer end thereof. A screw 14² passes down through an intermediate portion of the clamp into a screw-threaded socket in the bottom of the said seat, so that when the screw is tightened the said spring-fingers tightly clamp the various type in position and the unevennesses in the type are allowed for and taken up by the spring-fingers, and also as the spring-fingers bear on the type a distance in from their outer ends said type lie approximately parallel and their outer ends are not inclined down. By employing this peculiar arrangement the type can be easily removed or inserted at any time and the date or hour easily removed or inserted. The fingers extend out to print a line above the letters 12. Vertical partitions or stops 15 are arranged in the peripheral groove 8² at opposite sides of the series of type.

16 is the printing-character for canceling the stamp, segmental-shaped and formed with suitable ribs on its outer face to print the parallel or other canceling lines across the stamp and letter-face and with the flange 16' from its inner face to fit in the groove 8², with the face of the printing-block extending up flush with the upper surface of the roll, as clearly shown in Figs. 8 and 9. This printing-block is pivoted at one end and the roll at this point is so formed that the opposite end of the said block can be swung into and out of printing position according as to whether the machine is used for outgoing or incoming mail. A clamping-screw 16'', passing through a radial slot 16³ in the roll-top down through the free end of said block against the wall of the recess, can be employed to adjust and clamp the said stamp-printing block in the desired adjustment, the bottom of the groove and edge of the printing-roll being so formed to receive and permit this adjustment of said stamp-printing block, so that the block can be swung out into the circle of the remaining type and into operative position or can be moved inwardly out of said circle and out of operative position, so as not to engage the inker or the letter except possibly at a small portion of its pivoted end just in advance of the printing-type. In this connection it is of course well known that incoming letters from other offices have the date of receipt stamped on their backs without the stamp-canceling marks on the face of the letter. This stamp-canceling character is arranged in the periphery of the printing-roll immediately in advance of the date, &c., printing type, so that said character first engages and prints on the face of the letter and the place

and date follow in two parallel lines, preferably.

18 is a cam arranged on the top surface of the printing-roll, said roll being so arranged that the reciprocating feeder moves back and forth over the same. This cam is arranged on the roll in advance of the printing-characters and so as to engage the reciprocating carrier of the feeder after it has completed its return stroke to the right and as it is about to start to the left on its feeding stroke and crowd and force said carrier in toward the letters and insure its grasping and taking hold of a letter at each stroke. The cam is arranged on the roll so as to engage the rear edge of the feeder-carrier and is usually of such length and so shaped as to press the feeder inwardly until it has taken hold of the letter. The cam then gradually leaves the carrier, so that when the feeder has completed its feeding stroke the cam has passed out of engagement with the same and allowed it to spring to its limit of movement away from the letters in its return stroke. The cam is here shown as a curved strip secured on the top surface of the roll by screws or pins.

20 is a vertical pivot eccentrically arranged on the printing-roll, preferably between said cam and the printing-type, to pivotally receive a pitman 21 at its right end pivotally joined to the lever *u*⁶, between its ends, to properly swing said lever and reciprocate the feeder in the proper sequence, so that the feeder will present the letter to the printing roll so that the printing-characters will print on the letter in the proper place. Each revolution of the printing-roll moves the feeder a complete return and a complete feeding stroke. The opposite or left-hand end of this pitman 21 is continued and connected with the stacking mechanism to operate the same.

Any suitable inking device can be provided for the printing-roll. In the present instance a circular casing 22 is employed open at the top and with a small side opening adjacent to the printing-roll, and with a lateral ear or extension 22', perforated to removably fit on a pin 22'', extending up from the front machine-table. 23 is the inking-roll of suitable absorbent material removably located in said casing and having a shaft 23' extending downwardly through a central bearing in the bottom of the casing and into a slot 24 in the end of a plate 25, rigidly secured to the machine-table. This slot is of such width as to permit limited swing of the casing and contained inking-roll toward and from the printing-roll, and a plate-spring 26 is provided bearing against the lower portion of the inking-roll shaft and yieldingly pressing the inking-roll through its shaft toward the printing-roll.

The inking-roll engages no part of the periphery of the printing-roll excepting the printing-characters, as the inking-roll is usually arranged only opposite the part of the roll containing the type and all the portions of the roll in the horizontal plane of the

type are reduced and out of engagement of the inker, the soft surface of which is engaged by the printing-characters to receive the ink, and the roll is rotated thereby. Whenever
 5 desired for inking or to insert a new roll, the casing can be easily lifted from the pin and slotted plate. This is a most simple and durable and efficient inking device, and there is no danger of parts other than those de-
 10 sired becoming inked or of the ink spattering around on surrounding parts of the machine or onto the letters, as there are no parts of the printing-wheel which receive ink except the printing-characters.

15 An impression-roll 27 is arranged in operative position relative to the printing-roll at the rear side of the vertical wall and at the rear side of the letter passage-way from the feed to the receiving-ways. The impression-
 20 roll is mounted on the upper portion of a vertical shaft 27', extending below the front machine-table and journaled to rotate in a vertical bearing 28 at the free end of a horizontally-swinging arm 28', carrying said shaft 27' and
 25 the impression-roll and swinging on the shaft 29 as a center. The upper end of the bearing 28 extends into a slot 30 on the top table to permit swing of the parts toward and from the printing-roll. This bearing 28 also has a
 30 lateral ear 28'' beneath the top table, against which the free end of a plate-spring 28³ bears to yieldingly press the impression-roll toward the printing-roll. The opposite end of this spring is suitably and adjustably secured to
 35 the framing of the machine. The lower end of the shaft 27' beneath the bearing 28 is provided with a pinion 31, meshing with the gear 32 on the shaft 29, which is the center on which the arm 28' swings, so that said
 40 pinion and gear are always in mesh, notwithstanding the position of the arm. The upper end of this shaft 29 is suitably journaled in the top table, and its lower end is journaled in an arm 29' from the machine-framing.
 45 The gear 32 meshes with and is driven by the pinion 33 on shaft 34, depending from the machine-table. This pinion 33 meshes with and is driven by the gear 35 on the printing-roll shaft 9, so that the impression-roll shaft
 50 is positively driven from and in an opposite direction to the printing-roll shaft and at a higher rate of speed than the printing-roll, but so that the peripheries of the two rolls travel at like speed.

55 The auxiliary feed-roll shaft *v'* has a gear *v*⁸ on its lower end meshing with and driven by the pinion 36 on the shaft 37, depending from the machine-table and meshing with and driven by the gear-wheel 35 on the printing-roll shaft.
 60

To go back now to the impression-roll, it will be seen that this roll is composed of two parts—viz., the feeding-section and the impression portion or section. The feeding-section 27'' forms the lower portion of the roll and rigid with its shaft and having the lower portion of its periphery smooth-faced and en-

gaging the lower smooth-faced portion 8' of the printing-roll when said rolls are not separated by a letter, and the upper vertically cor-
 70 rugated or roughened portion corresponding to and opposite the roughened portion 8'' of the printing-roll, the roll at this point being slightly less in diameter than at the smooth-
 75 faced portion, so that the smooth-faced portions of the printing and impression rolls engage when no letters are between them and hold the remaining portion of the rolls out of engagement, and thus avoid wear and prevent
 80 injury to the letters and to the impression-surface and feeding portions of the rolls. The bottoms or walls of the passage between the two letterways and on which the letters slide in passing between the printing and impression
 85 rolls are so arranged and elevated that the letters do not pass between said smooth-faced portions of the two rolls, but pass in a plane above them between the grooved portions of their peripheries which in a manner grasp
 90 and positively feed the letters and should be allowed to approach sufficiently to grasp thin letters and postal cards and the like. This impression-roll is preferably recessed at its
 95 under side and rests on a collar on its drive-shaft, as clearly shown in Fig. 7. The impression-section 27³ is arranged opposite and in approximately the same horizontal plane as the grooved and type portion of the printing-roll. This impression portion or section is provided with a suitable impression-surface.
 100 (Not shown herein.) This impression portion can rock vertically independently of its shaft and the feeding portion of the roll and is yieldingly held in its normal vertical position. Any suitable construction can be em-
 105 ployed in mounting and connecting the roll to permit this rocking, although in the present case the enlarged bore of the platen has a sleeve 27⁴ inserted in the upper end thereof and extending about half-way through the
 110 bore, with its lower edge resting and formed to rock on the upwardly-facing annular shoulder 38 of the roll-shaft, the shaft being reduced above said shoulder to loosely pass through the sleeve or contracted part of the
 115 roll-bore, and reduced inwardly on a taper downwardly from the shoulder to the plane of the lower end of the roll, so that the roll can rock vertically from its center.

I do not limit myself to forming the shoulder in the impression-roll by the sleeve, as it can be formed in other ways.

The roll-shaft extends above the roll, and a flanged sleeve 27⁵ is on the shaft resting on the roll and surrounded by a coiled expansive
 125 spring 27⁶ at its upper end bearing up against the arm 27⁷, removably secured on the upper end of the shaft with one end extended downwardly into a socket 27⁸ in the upper end of the platen-roll, so that the spring yieldingly
 130 holds the roll in its normal vertical position, and said arm positively connects the shaft and roll and rotates the roll with the shaft. I do not limit myself to the employment of

the arm to enter said socket, as it can be dispensed with and the parts otherwise formed so that the impression portion revolves with the shaft without detriment to the rocking function. This impression portion thus maintains its surface parallel with the plane of the printing-characters when letters with parallel sides pass between the rolls, and always maintains its surface in proper relation when letters of uneven surfaces or faces pass through the rolls and so as to properly press the letters against the printing-characters and to receive the impact of said printing-characters, whether the letters be very thin or very thick and bulky.

The arm 28', carrying the impression-roll, is pivoted to one side of the plane in which the letters travel between the printing and impression rolls, so as to extend diagonally across said plane, and the pivotal point of said arm is forward of said letters as they pass through and between said rolls—that is, beneath the front end of the receiving-way. A material advantage is attained by thus pivoting and arranging the swinging arm, as the impression-roll most easily and quickly yields to the letters, yet without detracting from the force of the impression-roll against the printing-roll. The letters do not have to force the impression-roll directly at right angles to the path of the letters, but said roll moves in a curve somewhat with the letters, so that the forward movement of the letters more easily opens the rolls. All portions of the printing-roll are always out of contact with the platen-roll, and that the type and printing characters thereof are the only portions which approach within operative relation to this impression-roll, so as to print the thinnest matter and yet not engage the platen-roll when nothing is passing through the rolls.

The letters are carried between the rolls by engagement with their surfaces, and also by the reciprocating feeder, which travels across the upper surface of the printing-roll and beyond the same, and thereby supports the letters between the rolls and assists in shooting them transversely across the front end of the receiving-way, where each letter is pressed by a suitable stacker toward the rear end of said way and against the mass of letters therein, which are thus pressed and stacked in the proper position.

The stacker shown in the present case comprises a horizontally-movable pusher at the front end of the receiving-way movable rearwardly and forwardly in and out of the front end of the receiving-way through the slot in the front wall. The pusher approximately consists of a horizontally-disposed somewhat J-shaped piece of metal 42, with its front end corresponding to the upper end of the J, pivotally joined by a horizontally-disposed link 39, with a pivot 40, extending up from the left-hand front corner of the machine table, so that said link forms a swinging and movable fulcrum for the peculiarly-shaped

pusher 42, so that the fulcrum of the pusher-piece moves in an arc toward and from the front end of the receiving-way and toward and from the outer edge of said way. At a distance forwardly from its pivotal joint with the link 39, forming its movable fulcrum, the pusher is pivotally joined at 41 to the left-hand extension of the coupling-pitman 21, extending from the lever operating the feeder over the printing-wheel and eccentrically pivoted thereto and beyond the same to the stacker, so that all of these parts perform their respective functions in proper sequence. The pusher has the rear or inner laterally-extended engaging end 42' preferably curved or rounded at its extremities, so as not to catch or obstruct the free passage of the letters in their proper course. At the beginning of its in and lateral stroke toward the outer edge of the receiving-way with the pitman-pivot at the right-hand side of the printing-wheel the feeder is starting on its stroke to feed and the printing-characters have just about completed taking ink from the inker, the pitman then moves with the printing-roll gradually forwardly and to the left, carrying the rear end of the stacker into and toward the rear of the receiving-way and at the same time toward the outer edge thereof, thereby pressing in the letters and properly placing the letter previously received in said way. As the pivot of pitman 21 on the printing-wheel starts beyond the plane in which the axles of the printing and impression rolls are located the stacker starts to draw forwardly and toward the outer edge of the way just before the next letter is discharged into the receiving-way in front of the stacker, which, as the printing-wheel continues to move around, moves forwardly out of the receiving-way and to the right and enters the same again to press said letter into proper place and press back the letters in the way. Every revolution of the printing-wheel causes a complete inward stacking throw of the stacker, and also a return throw thereof.

The stacker and reciprocating feeder are so connected with the printing-wheel that the stacker moves a little in advance of the feeder in its operative movements—as shown, for instance, in Fig. 4, where the feeder is shown at its limit of return movement just ready to start on its feeding-stroke, while the stacker has already entered quite a little distance into its pressing or pushing path in the front end of the receiving-way. Fig. 5 shows the feeder at the middle of its feeding-stroke with the stacker at its limit of inward movement in the receiving-way. Dotted lines in Fig. 5 clearly show the relative positions of the stacker and feeder at different points. The forwardly-extending end of the pusher extends through the front wall and does not pass rearwardly beyond said wall, but at all parts of the stroke of the stacker remains extending through said wall so as not to catch

the letters. It should be observed that the pusher moves toward the outer edge of the receiving-way while pushing the letters back in said way, so as to carry the letters against the side guide as they are pushed back in the way.

The stacking device, *per se*, is not claimed in this application, but forms the subject-matter of a divisional application, filed December 23, 1895.

It should be observed in connection with this machine that a great number—say several thousand—properly-faced letters can be placed in the receiving-way in front of the follower thereof, the follower in the receiving-way being pressed up to the front end thereof, and when the controlling-lever is pressed forwardly and caught behind its holding-shoulder the machine will start to work on the letters and feed each separately from the front end of the feedway to the front end of the receiving-way and postmark and cancel the stamp of each and properly stack the letters in the receiving-way in a long line, all properly faced, so that they can be easily taken out in a body to the distributing-table, and that when all the letters have been passed from the feedway the machine will automatically stop. Hence a single operator can attend to and serve several machines, as he has merely to place a large number of letters in each and take the letters from the machines, and while one machine is loaded and post-marking letters he can be filling another machine, and so on. An immense quantity of mail-matter can thus be most rapidly and economically handled.

The construction herein shown has been most minutely described for the sake of clearness; but I wish it understood that I do not thereby limit my invention to the specific construction described in detail, but it is obvious that various changes might be made in the forms, constructions, and arrangements described and shown without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the construction shown, but consider myself entitled to all such variations as fall within the spirit and scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to cover by Letters Patent of the United States, is—

1. In a mail-marking machine, the combination of a supporting-frame, letter-ways thereon having movable feed-bottoms, a horizontally-disposed three-armed lever fulcrumed to the frame with two opposite arms connected to said bottoms to reciprocate them oppositely, said lever being yieldingly held to its limit of swing in one direction, a vertically-disposed lever arranged to swing said horizontal lever by its third arm, and means to rock said vertically-disposed lever, substantially as described.

2. In a mail-marking machine, the combination of a supporting-frame, letter-ways

thereon having movable floors, a printing mechanism, a feeder to carry the letters thereto, a main drive-shaft arranged horizontally in the lower part of the frame and provided with a cam at its rear end controlling the said floors through intermediate mechanisms, and the vertical printing-roll shaft at the front end of the machine driven from said drive-shaft and actuating the feeder and printing mechanism, substantially as described.

3. In a mail-marking machine, the combination of a frame, letter-ways thereon provided with letter-feeding means, a vertical shaft, a stacker, printing mechanism and a feeder actuated by said vertical shaft, a horizontal drive-shaft having a cam and driving means, gearing connecting the drive-shaft to the vertical shaft, and a vertically-arranged swinging lever held against said cam and actuating said feeding means of the letter-ways, substantially as described.

4. In a mail-marking machine, the combination of a letter-way, printing and feeding mechanisms, driving means capable of being thrown into and out of gear to start or stop the machine, a spring constantly tending to throw said means out of gear and to stop the machine, a hand-operated movable member to operate said means against the tension of said spring to throw said means into gear and start the machine, a catch to hold said member against the tension of the spring with the driving means in gear, a trip arranged to engage said member and force it from engagement with said catch and permit the spring to throw the driving means out of gear, and mechanism controlled indirectly by the mail-matter in the letter-way and controlling said trip to disengage the hand-operated movable member from its catch when all of the letters have been fed from said way, substantially as described.

5. In a mail-marking machine, the combination of a letter-way, letter-feeding mechanism, driving means, mechanism for throwing the driving means into and out of gear with the machine comprising a lever and a spring constantly acting on the lever to throw the driving means out of gear, a catch to hold the lever against said spring with the driving means in gear, a trip to engage the lever and press it from the catch and thereby permit the spring to swing the lever to stop the machine, and a follower in the letter-way arranged, on arriving at its limit of forward movement, to operate the trip to release the lever, substantially as described.

6. In a mail-marking machine, the combination of a frame, a letter-way, letter-feeding means, driving means, a sliding clutch to throw the driving means into and out of gear with the machine, a lever fulcrumed to the frame and engaging said clutch to throw the same, a spring constantly acting on said lever to throw the driving means out of gear, a catch to hold the lever against the tension of said spring with the driving means in gear, a trip

arranged beside the way to release the lever, and a follower in the way having means controlling the trip to release the lever as the follower arrives at its limit of forward movement, substantially as described.

7. In a mail-marking machine, the combination of a frame, a letter-way, driving means capable of being thrown into and out of gear with the machine, a hand-operated movable member to throw said driving means into and out of gear and yieldingly held to throw the same out of gear, a rigid stop or catch on the frame arranged to hold said member with the driving means in gear, a trip pivoted to the frame near the stop and arranged to engage said member and push it from engagement with said stop, and a follower in said way controlling said trip, substantially as described.

8. In a mail-marking machine, the combination of a frame, a letter-way, letter-feeding means, driving means, mechanism to throw said means into and out of gear with the machine, comprising a swinging lever, a spring acting on said lever to throw the driving means out of gear, a catch to hold the lever against the tension of the spring with the driving means in gear, a trip to disengage the lever from said catch and permit the spring to stop the machine, said trip being set by the return movement of the lever to the catch, and mechanism controlled indirectly by the letters in the way to operate the trip when the last letter is fed from the way, substantially as described.

9. In a mail-marking machine, the combination of a frame, a letter-way, letter-feeding means, means to throw the machine into and out of gear with its driver, a hand-operated movable member controlling said means, a spring actuating the same in one direction, a catch to hold the same against the tension of the spring, an elbow-lever pivoted beside said member to engage the same and force the member from the catch and permit the spring to actuate the same, and a follower in the way controlling the elbow-lever to actuate the same to release said member when the last letter is fed from the way, substantially as described.

10. In a mail-marking machine, the combination of a frame, a letter-way, letter-feeding means, mechanism for starting and stopping the machine comprising a movable hand-operated member, a spring actuating the same in one direction, a catch to hold the same against said spring, a tripping device engaging the member when held by the catch, and means controlled by the letters in the way to operate the tripping device to release the lever from the catch, said tripping device so arranged in relation to said member as to be engaged by the member when moved to the catch and set ready to again release the member, substantially as described.

11. In a mail-marking machine, the combination of a frame, a letter-way, a follower in the way having a forward projection exterior

of and beside the way, a movable part mounted on the frame exterior and forward of the way to be engaged and moved by said projection as the follower reaches its limit of forward movement, a tripping device controlled by said movable part, a movable spring-actuated member, a catch to hold the same, said tripping device arranged beside said member to engage and push the same from the catch, and means for starting and stopping the machine controlled by said movable member, substantially as described.

12. In a mail-marking machine, the combination of a frame, a letter-way, means for starting and stopping the machine, a spring-actuated movable member controlling said means, a catch to hold the member against the spring, an elbow-lever pivoted to the frame beside said member to release the same from the catch, a follower in the way having a projection, and a lever controlling said elbow-lever and arranged in the path of said projection, said two levers returned to their normal positions by the movable member, substantially as described.

13. In a mail-marking machine, the combination of a frame, two letter-ways thereon, a letter feeding and printing means, the frame having a slot with a notch or shoulder at one edge thereof, mechanism for starting and stopping the machine, a spring-held lever controlling said mechanism and fulcrumed to the frame beneath the ways and extending through and above said slot and capable of being moved against the tension of its spring and caught in said notch, and means controlled by the letters in a letter-way to release the lever from said notch, substantially as described.

14. In a mail-marking machine, the combination of a frame, a letter-way arranged horizontally thereon, a slideway arranged beside and exterior of the way, a slide traveling on said way and parallel with the letter-way, a follower extending laterally from said slide and across the way, means to forwardly press said slide and follower, a stop-motion for stopping the machine, and a movable part controlling said stop-motion and arranged at the exterior of the letter-way and in the path of said slide so as to be engaged and moved by the slide to stop the machine when the follower reaches its limit of forward movement and the last letter is fed from the way, substantially as described.

15. In a mail-marking machine, the combination of a frame having a slot with a catch or shoulder at one edge thereof, a letter-way, means for starting and stopping the machine, a spring-held lever controlling the same and extending through said slot and arranged to be caught and held by said shoulder with the machine in gear, a trip-lever arranged to swing over the slot beside said shoulder and to press the lever from the shoulder and to be returned by engagement with the lever on its return to the shoulder, and automatic

means controlled by the letters in said way for operating said trip, substantially as described.

16. In a mail-marking machine, a letter-way having a guide at or near one edge and a longitudinal raised edge at or near the opposite side of its floor on which the lower edges of the letters rest to raise the ends of the letters and throw their opposite ends against said guide, substantially as described.

17. In a mail-marking machine, the combination of a horizontally-disposed receiving-way having an inlet at one side of its front end through which the letters are discharged transversely of the way, a longitudinal guide arranged along the opposite edge of the way comprising a rod a distance above the plane of the way, swinging supports for said rod to shift the same bodily above and transverse of the way, and means for locking said rod at the desired position, substantially as described.

18. A letter-way having a longitudinal guide at one side thereof, movable supports for said guide to shift the same transverse of the way, and an operating and locking lever for the guide arranged beneath the way and extending to the opposite side of the machine, substantially as described.

19. In a mail-marking machine, the combination of a letter-way, a side guide arranged longitudinally at one edge thereof, movable supports for said guide permitting movement thereof transverse of the way, and a follower in the way movable on said guide and having its free end resting and slidable on the floor of the way, substantially as described.

20. In a mail-marking machine, the combination of a letter-way, a longitudinal side guide at one edge of the way and movable bodily transverse of the way, and a controlling-handle for said guide extending to the opposite side of the machine, substantially as described.

21. In a mail-marking machine, the combination of a letter-receiving way, the longitudinal guide-rod at the outer edge of the way, arms carrying the same and pivoted to the frame, and an operating-handle connected to move said rod in or out and extending to the opposite side of the machine and provided with locking or catching means, substantially as described.

22. In a mail-marking machine, in combination, a letter-way, a follower therein mounted to permit upward swing, a projection moving with the follower, and a stop to cooperate with said projection to prevent raising of the follower at one end of the way, substantially as described.

23. In a mail-marking machine, the combination of a feedway having a front wall with a discharge from the way along the wall, means to press the letters forwardly against said wall, a yieldingly-held separating device at said discharge to press the letters against said wall as they are carried through the dis-

charge, a printing-couple at the discharge, one member of the couple projecting rearwardly through and beyond the wall, and a feeder arranged to carry the letters along said wall and through the discharge to said couple so that each letter grasped by the couple is pressed rearwardly from the wall and against said separating device, substantially as described.

24. The combination of a feedway having a discharge, a guide extending along said discharge, a support on the opposite side of the discharge, a series of spring-held fingers independently pivoted to the support and extending across the discharge to the guide so that their free ends can swing back in the discharge, said fingers arranged side by side and certain fingers having rounded or convexed letter-engaging faces and other fingers having the end letter-engaging edges to rub along the rear face of each letter as passed through the discharge, and a feeder to feed the letters through said discharge, substantially as described.

25. In a separating device, the combination of a guide arranged on one side of a discharge and along which the letters are moved, a support, a series of fingers independently pivoted to the support and extending across the discharge with their free ends held yieldingly toward said guide so that each letter moving along the guide swings the free ends of the fingers, a finger having its letter-engaging face rounded or convexed toward the guide and forwardly to press the letters against said guide, and another of the fingers terminating at its free end in an edge to rub along the face of the passing letter and to catch and hold back the ends of the letters behind the one being fed, substantially as described.

26. A separator device comprising a guide arranged along a discharge, a series of parallel independent fingers arranged side by side and independently held yieldingly across the discharge toward said guide, one or more fingers of the series having its letter-engaging face curved or rounded toward the guide and in the direction of movement of the letters, and another finger having a concaved or reduced face terminating in an edge to rub along the face of the passing letter and to catch and hold back the ends of letters behind the letter being fed, substantially as described.

27. A separating device comprising a support, and a series of parallel independent metal blocks or fingers, each at one end pivoted to the support with its free end extending across the path of the letters, a guide at the opposite side of said path, stops to limit the inward swing of the blocks, and springs yieldingly holding the blocks against said stops, certain blocks having rounded curved letter-engaging faces and other blocks terminating in edges, substantially as described.

28. In combination, a guide arranged along one side of the path of the letters, a separa-

tor-finger yieldingly held extending across said path and toward said guide and having a straight end to be engaged by the ends of the letters being fed and terminating in an edge to catch and hold back the ends of the letters behind the one being fed and when said finger has been pressed back by said letter, and a finger having an extended rounded letter-engaging surface to hold the ends of the letters against said guide to support and guide them when their ends engage said straight end of the other finger, substantially as described.

29. A separator comprising a swinging or yielding finger terminating in a straight end or plate extending across the path of the letters and engaged by the ends thereof, and a pivoted yieldingly-held block at one side of the finger and having the curved or rounded letter-engaging side and end, and a guide opposite the ends of said finger and block and toward which they are yieldingly held, substantially as described.

30. A separator device for mail-marking machines comprising a series of separator-fingers, one or more of which is provided with an end plate projecting beyond the finger and cut off square at both ends so that four edges are formed, and clamping means whereby the plate can be removed and reversed to separately employ the four edges, substantially as described.

31. In a mail-marking machine, the combination of a letter-way having a discharge, a guide extending along the discharge, a support on the opposite side of the discharge, a series of parallel independent fingers pivoted to the support with their free ends extending across the discharge toward the guide, the support forming stops to limit the swing of the fingers toward the letter-way, and springs pressing the fingers against said stops and holding the fingers across the way, substantially as described.

32. A separator comprising a series of parallel independently-pivoted spring-held fingers arranged side by side, alternate fingers having rounded convexed letter-engaging faces, and intervening fingers terminating in ends with edges to catch the ends of letters, substantially as described.

33. In a separator, a yieldingly-held finger having a projecting reversible plate with a square end, substantially as described.

34. The combination of a wall, a support arranged opposite the same with lateral projections, metal separating-fingers pivoted in the front edge of the support and having notched rear ends, and plate-springs extending forwardly from said projections at an angle with their front ends fitted in said notched ends of the fingers, substantially as described.

35. A printing-roll, in combination with a shaft having an annular upwardly-facing shoulder below its upper end with a circumferentially-reduced portion beneath the shoulder, an impression-roll having a bushing in

the upper portion of its bore resting and rockable on said shoulder, and a spring yieldingly holding the roll in its normal position, substantially as described.

36. The combination with a shaft, of a roll confined loosely thereon, the shaft extended above the roll and having an arm therefrom extended down into a socket in the roll, and a spring yieldingly holding the roll in its normal position, substantially as described.

37. In a mail-marking machine, the combination of a letter-way having a front end wall and a discharge behind the same, a pair of rolls at said discharge, a reciprocating feeder arranged in front of said wall having a biting-surface extending through the wall to engage each letter near one end and carry the same through said discharge to the rolls, and a rotary auxiliary feeder extending through the wall in different vertical and horizontal planes from said positive biting-surface and acting in unison with the same to feed the letters, and also to line them up and ease the strain on the end of each letter where grasped by said biting-surface, substantially as described.

38. In a mail-marking machine, the combination of a letter-way provided with letter-feeding means, and a lateral end discharge, a positive feeder at said end having a biting-surface to grasp each letter at or near its end and positively carry it from the way through the discharge, and a rotary auxiliary feeder having a segmental friction-surface at said front end of the way with a feeding stroke in the same direction as and in unison with the positive feeder and engaging the front faces of the letters at a different portion from said positive feeder, to line up the letters for engagement by the positive feeder and to relieve strain on each letter, substantially as described.

39. In a mail-marking machine, the combination of a letter-way having a lateral discharge at its front end, separating means at the discharge, a reciprocating feeder at said end projecting into the way to engage the front face of each letter and having an extended stroke to carry each letter through the discharge and separating device, and a rotary auxiliary feeder having a friction-surface extending into the way a distance back from said discharge and having a stroke shorter than said reciprocating feeder to engage each letter rearwardly from said reciprocating feeder to line up the letters and act in unison with the reciprocating feeder, substantially as described.

40. In a mail-marking machine, the combination of a letter-way having a front end wall with a side discharge behind the wall, means to press the letters forwardly, a reciprocating positive feeder in front of the wall and projecting through the same to engage each letter near its inner end and carry the same through the discharge, and a rotary auxiliary feeder having a projecting friction-surface in a different horizontal plane from said posi-

tive feeder and rearwardly from the discharge and projecting through said wall to act in unison with the positive feeder in starting the letters in the discharge movement, substantially as described.

41. In a mail-marking machine, the combination of a letter-way having a front end wall and a side discharge behind the same, a printing-couple at said discharge, a horizontal slot in the wall extending past the discharge, a positive reciprocating feeder in front of the wall and projecting through said slot to carry each letter through the discharge, the wall having another horizontal slot in a different plane and extending rearwardly from said first-mentioned slot, and a rotary auxiliary feeder in front of the wall and projecting through said last-mentioned slot to act in unison with the positive feeder on each letter, substantially as described.

42. In a mail-marking machine, the combination of a feedway and a receiving-way arranged side by side with their front ends terminating in about the same plane and provided with horizontally-slotted front end walls, main and auxiliary feeders projecting through different portions of the feedway-wall, a printing-couple between the ways and into which the letters from the feedway are discharged and which discharges the same into the receiving-way, and a horizontally-swinging stacker moving back and forth through the receiving-way wall and over the floor of said way, substantially as described.

43. The rotary letter-feeding wheel having an interior opening with adjacent radial openings through the periphery of the wheel, and a strip of friction material in said opening and carried out one of said radial openings and along the periphery of the wheel and into the other radial opening, and means to hold the strip and permit adjustment thereof to renew its wearing-surface, substantially as described.

44. The combination of a letter-feedway having a front wall, a printing mechanism beside the same, a reciprocating feeder on an elevated ledge in front of the wall and projecting through the wall, and the rotary feeding-roll in front of the wall beneath the ledge and provided with a projecting friction-surface extending through the wall, substantially as described.

45. In a mail-marking machine, the combination of a letter-feedway, a printing mechanism beside the same comprising a printing-roll on a vertical shaft, a reciprocating feeder at the front of the way connected with and driven from the printing-roll, and the rotary auxiliary feeder at the front of the way geared to and driven from said printing-roll shaft, substantially as described.

46. A hollow feeding-roll having radial slits, a flexible friction-piece on the periphery thereof with its ends in the slits, and spring clamping means within the roll having locking means, substantially as described.

47. In a mail-marking machine, the combination of a feedway, a receiving-way, an interposed printing-couple, a feeder carrying the letters from the feedway to the printing-couple, a stacker moving in an encircling path into and out of the receiving-way above the plane of the floor thereof, and a swinging connection rigid within itself, between the stacker and feeder and actuated from one member of said couple to operate the feeder and stacker in unison, with the stacker in operation moving in advance of the feeder, substantially as described.

48. In a mail-marking machine, the combination of a feedway, a receiving-way, a printing-couple interposed between the ways, a feeder for the feedway, a pitman eccentrically connected with and actuated by a member of the printing-couple and at one end connected to actuate said feeder, and at the opposite end provided with a stacker or pusher carried thereby horizontally into and out of the receiving-way, substantially as described.

49. In a mail-marking machine, the combination of feed and receiving ways, a feeder to carry the letters from the feedway, a stacker to pack the letters in the receiving-way, a rotary shaft between the stacker and feeder, and an operating connection from the feeder to the stacker connected with and actuated by said shaft, substantially as described.

50. In a mail-marking machine, the combination of feed and receiving ways, an interposed printing-couple, a reciprocating feeder carrying the letters from the feedway to said couple, a swinging lever actuating said feeder, a swinging stacker moving into and out of the receiving-way, and a pitman eccentrically pivoted on one of the printing-couple members and actuating said lever and stacker, substantially as described.

51. In a mail-marking machine, the combination of feed and receiving ways, printing mechanism, a feeder carrying the letters from the feedway, a stacker moving horizontally in an encircling path into and out of the receiving-way, and actuating connections between the feeder and stacker at an intermediate point eccentrically connected with and driven by a rotary part of the machine, substantially as described.

52. In a mail-marking machine, the combination of a feedway, a printing-roll, a receiving-way, a reciprocating feeder at the feedway, a stacker at the receiving-way, and a connection between and operating the feeder and stacker and pivoted eccentrically, at an intermediate point, to the printing-roll and actuated by the same, substantially as described.

53. In a mail-marking machine, the combination of a printing-roll, an impression-roll, both turning horizontally, a horizontal floor on which the lower edges of the letters travel through the rolls, said rolls having coacting faces just above the floor to grasp and feed

the letters, the upper end of the impression-roll above said face provided with an independently-yielding round and continuously-concentric impression portion, the upper end of the printing-roll above said face reduced in diameter to prevent engagement or coaction with said impression portion, and type in said reduced portion coacting with said impression portion, substantially as described.

54. In a mail-marking machine, a printing-roll, a shaft therefor in stationary bearings, printing-characters in the edge of the roll near one end thereof, said roll having a circumferential letter engaging and feeding portion and a circumferential bearing portion, in combination with an impression-roll, a yieldingly-held shaft therefor, said impression-roll having an impression portion, a feeding portion, and a bearing portion coacting respectively, with the printing-characters, feeding and bearing portions of the printing-roll, the bearing portions arranged to one side of the path of the letters and limiting the movements of the feeding portions toward each other, substantially as described.

55. In a mail-marking machine, the combination of feeding means, a floor on which the lower edges of the letters travel, coacting printing and impression rolls, the printing-roll having type arranged in its periphery and a letter-feeding portion, said type and letter-feeding portion arranged above said floor, said impression-roll having a concentric impression-surface and a feeding-surface opposite the type and feeding portion of the printing-roll, respectively, said rolls having engaging portions beneath the plane of the floor, substantially as described.

56. A printing-roll having type in the upper portion of its edge, a feeding portion below the type and a bearing-surface below the feeding portion, in combination with an impression-roll having feeding and bearing portions and a concentric impression portion opposite the type of the printing-roll and independently movable or yielding, substantially as described.

57. A printing-roll having a circumferential groove, printing-characters therein, a circumferential roughened feeding-surface at one side of the groove, and a circumferential bearing-surface to one side of the feeding-surface, at which portion the roll is greater in diameter than at the feeding-surface, substantially as described.

58. The combination of a printing-roll having a portion of its periphery formed to feed the letters, a portion of said roll above the feeding portion of reduced diameter and containing the printing-characters, with the impression-roll having a feeding portion corresponding to said feeding portion of the printing-roll, and an upper impression portion normally out of contact with the printing-characters and always out of contact with the printing-roll, substantially as described.

59. An impression-roll having the letter-

feeding portion fixed on its shaft, and the independent impression portion rockable on its shaft, substantially as described.

60. In a mail-marking machine, the combination of a frame, a letter-way, a printing-couple, means to carry the letters into the printing-couple, an approximately straight arm at one end fulcrumed to the frame and arranged at such an angle to the path traveled by the letters to the couple as to tend to swing with the letters under the impact thereof, a shaft in the free end of said arm provided with rotating means and carrying the impression-roll of said couple formed of a feeding portion rigid on the shaft and an independently-yielding impression-surface, and means yieldingly holding said arm with the impression-roll toward the printing-roll, substantially as described.

61. In a mail-marking machine, the combination of a frame, a printing-couple, means to feed letters thereto, a horizontally-swinging arm fulcrumed at one end and yieldingly held in one direction, a vertical shaft in the free end of the arm, the printing-couple composed of printing and impression rolls geared to rotate together, the impression-roll mounted on said shaft and having a bearing portion of enlarged diameter limiting the inward swing of the arm and engaging the printing-roll and holding the remaining portions of said rolls separated, substantially as described.

62. In a mail-marking machine, a printing-roll having a recess or socket in its periphery intermediate its ends, removable printing-type therein, securing means for the type extending through and operative from an end of the roll, a block movable from the printing-line back into the recess out of printing position and formed at its outer face to print stamp-canceling marks, said block pivoted at one end in the recess, and clamping means to lock the block in the desired adjustment and extending to and operative from said end of the roll, substantially as described.

63. In combination, an impression-roll, a printing-roll having printing-characters in the periphery thereof, an edge recess in the roll, and a segmental-shaped block so arranged in the recess that it can be withdrawn into the same out of operative position, said block formed at the outer face to print and pivoted at or near one end to swing toward and from the printing position, and means to lock the free end of the block in the desired adjustment, substantially as described.

64. A printing-roll of a mail-marking machine having removable printing-type in its edge, an elongated recess in said edge, a segmental block at the exterior of the edge of the roll with printing-ribs on its outer face and a flange at its rear face extending into the recess so that the block can be moved in or out of printing position, and means for locking the block in or out of printing position, substantially as described.

65. A printing-roll of a mail-marking machine having the circumferential groove, printing-type clamped therein, a segmental-shaped block at the edge of the roll extending up approximately flush with the top of the roll, the outer face of the block formed to print stamp-canceling marks; said block extending back into the groove and movable radially into and out of printing position, and means for locking the block in the desired adjustment, substantially as described.

66. A printing-roll having an inwardly-extending recess in its periphery beneath the top end of the roll, a segmental printing-block movable radially in the recess, said block pivoted near one end within the recess, a radial opening through the top of the roll into the recess, and a screw passed through said opening and screwing through the block and engaging a wall of the recess to lock the block, substantially as described.

67. A printing-roll having an inwardly-extending recess in its periphery at a point intermediate the ends of the roll, a radially-movable segmental printing-block at the periphery of the roll with a flange extending back into the recess, and a clamping means extending through an end of the roll into said flange so that the block can be moved into and out of printing position and clamped in the desired adjustment from the end of the roll, substantially as described.

68. In a mail-marking machine, the combination of an inker, an impression-roll, a printing-roll containing printing-type, and a stamp-canceling printing-block in said roll just in advance of the type and pivoted at its end nearest the type so that its opposite end can swing out of printing position and when swung in the pivoted end of the block will form an inclined edge just in advance of the type, substantially as described.

69. The combination of an inker, and an impression-roll, with a printing-roll having a circumferential groove and the edge above the groove, printing-type in the groove projecting beyond the circle of said edge, the adjustable segmental stamp-canceling block resting on the wall of the groove and projecting up in front of said edge above the groove and having the portion extending into the groove, substantially as described.

70. A printing-roll having an edge socket opening through an end of the roll, printing-type arranged in horizontal rows in said recess, and a clamping block or lever at said end of the roll and formed at one end with spring or yielding portions directly engaging and bearing down on the upper surfaces of the individual type in the upper row and thus independently locking each type, substantially as described.

71. A printing-roll having a type-containing socket opening through an end of the roll, a fulcrum bearing in said end of the roll arranged eccentrically thereto, a rocking clamping block or lever entering said socket and

clamping the type and having a fulcrum in said bearing, and securing means for the block arranged eccentrically to the roll and to rock the block on said fulcrum to clamp or release the type, substantially as described.

72. A printing-roll having a type-containing socket, a rocking clamping lever or block to lock the type, said block arranged entirely to one side of the center of the roll with a fulcrum at one end eccentric to the roll, and clamping means between its fulcrum and type-locking end entering the roll eccentric thereto, substantially as described.

73. A printing-roll having a radial recess opening through an end of the roll and receiving type, and a removable clamping-block on the end of the roll having its outer end formed into separate spring-fingers at the top of said recess and bearing separately on the type therein, and a clamping-screw passing through the block between its ends into the wheel forcing the fingers down on the type to hold them, or to permit loosening of the block and removal of the type, substantially as described.

74. A printing-roll having a type-socket opening through the top of the roll, the roll having a top recess extending in from said opening and a screw-threaded opening between the ends of said recess, type in said socket, a clamping-block loose in said recess with its outer end engaging said type at points inward from their outer faces, and a clamping-screw passing through an intermediate part of the block into said threaded opening, substantially as described.

75. A printing-roll having a type-socket in its face opening through an end of the roll and a recess in said end of the roll extending inwardly from said opening and having a depression at its inner end and a threaded opening between its ends, a clamping-block removably fitted in said recess with a projection loose in said depression and at its outer end bearing down in the type-socket, and a clamping-screw intermediate the block and in said threaded opening, substantially as described.

76. A printing-roll having a radial recess containing the removable type, and a clamping-block having a single end formed into parallel separate fingers bearing down separately on each type of the top row a distance in from the printing-faces, substantially as described.

77. A printing-roll having a radial recess opening through an end of the roll and containing rows of printing-type, a clamping-block on said end of the roll with spring-fingers at its outer end bearing separately on the top type, and clamping means for rocking the block to press the fingers on the type to lock the same, or to relieve pressure thereof on the type to permit removal thereof, substantially as described.

78. A printing-roll having a radial type-receiving recess opening through an end of the

roll, and a clamping-block arranged at said end of the roll to bear on and lock the type in the recess and having its edge extended outwardly to print a line beside the characters printed by said type, substantially as described.

79. In a mail-marking machine, the combination of a frame, feed and receiving ways, the frame having an opening between said ways, letter-feeding means, interposed printing mechanism comprising printing and impression rolls, a horizontally-disposed arm beneath the plane of said ways and at one end fulcrumed to the frame, a vertical shaft journaled in the free end of said arm and in said opening, the impression-roll being mounted on said shaft, a spring acting on said arm to hold said rolls in normal operative position, said arm arranged at such an angle to the path of the letters moving to the rolls as to swing open in a direction with the letters, and gearing from the printing-roll shaft driving said vertical shaft and comprising a gear concentric with the fulcrum of the arm, substantially as described.

80. In a mail-marking machine, the combination of a printing-roll and an impression-roll, with a reciprocating feeder having lateral play and feeding letters to said rolls and reciprocating across the end of one roll, said roll arranged to engage said feeder and press the same in, substantially as described.

81. In a mail-marking machine, a roll having a segmental cam-surface, in combination with a reciprocating feeder moving beside said roll and pressed in during a portion of its stroke by said cam, substantially as described.

82. In a mail-marking machine, the combination of a letter-way having a lateral discharge, printing and impression rolls at said discharge, a reciprocating feeder taking each letter from the way and through said discharge to the rolls and having a path of movement over one of the rolls, said roll engaging and pressing the feeder, at the beginning of its feeding stroke, in against the letter and releasing the inward pressure on the feeder during its return stroke, substantially as described.

83. In combination, a letter-feedway, a reciprocating feeder at an end thereof, a rotary printing-roll connected to actuate the feeder and provided with an end cam-surface engaging the front edge of the feeder and pressing the same in against the letters, substantially as described.

84. In combination, a letter-way having a slotted end wall provided with a slideway, a reciprocating feeder on and having a slight play in the slideway and provided with a biting-surface projecting into the letter-way, actuating means, a rotary member having a cam-surface engaging said feeder at each stroke and forcing the same inwardly, and moving away from the feeder at the remainder of its stroke permitting the feeder to move

away from the letters on its return stroke, substantially as described.

85. In combination, a frame, having a slot or way open at the inner end, a spring pressing into said way, the pin near said way, the ink-casing having an opening in one side receiving the printing-roll and an opening for said pin, and a removable ink-roll having its shaft formed to extend into said way so that the spring holds the roll toward the printing-roll, substantially as described.

86. In a mail-marking machine, the combination of a letter-way having an end wall along which the letters are discharged into and transversely of the way, a way side guide opposite the side at which the letters enter and adjustable transversely of the way, a spring extending into said way near said guide and adjustably secured to said wall to permit adjustment of the spring transversely of the way, substantially as described.

87. In a mail-marking machine, the combination of a letter-way having a side letter-inlet and a front end wall provided with a longitudinal slot, a side guide opposite the inlet, a spring having its free end pressing into and extending transversely of the way toward said guide, and clamping means at said slot holding the spring and permitting longitudinal adjustment thereof, substantially as described.

88. In a mail-marking machine, a reciprocating letter-feeder comprising a carrier angular in cross-section, and a block secured in the inner angle thereof with the needle-points projecting through the vertical web of the carrier, substantially as described.

89. The receiving-way of a mail-marking machine having the follower inclined transversely of the way, the inclined front end wall, and the rearwardly-pressing horizontally-disposed spring-finger, combined, substantially as described.

90. In combination, a feedway having a double end wall, and the reciprocating feeder fitted to slide within said wall and having the needle-points projecting inwardly through a slot in the wall, substantially as described.

91. A feeder comprising a series of parallel plates secured rigidly together into a solid rigid block, a series or layer of needles, or the like, secured at or on each plate with the points projecting from one edge thereof to form a surface of needle-points at one face of the block, substantially as described.

92. A feeder built up of parallel plates with turned-up longitudinal edges, and rows of needles or the like, secured on said plates with their points projecting beyond corresponding edges thereof, the plates secured together to form a block, substantially as described.

93. In combination, a letter-way having a slotted end wall with a slideway at the outer side thereof, a sliding carrier confined on the slideway with a vertical web or portion loosely

confined to said wall, a feeder-block secured on the carrier, and actuating means, substantially as described.

94. A feeder-block comprising a series of 5 rows of needles having the points thereof braced in the direction of feeding movement by plates, substantially as described.

95. A feeder comprising a series of rows of needle-points with plates arranged behind 10 each row and ending near the points, substantially as described.

96. A feeder built up of a series of plates with rows of points projecting therefrom, the feeder having a notch extending across the 15 plates, locking means entering the notch and securing the feeder to a carrier, in combination with the carrier, substantially as described.

97. A carrier, in combination with a feeder- 20 block rigid and solid within itself and having a surface of points at one face thereof, and a lock entering the block and removably locking the block rigid with the carrier, substantially as described.

98. A carrier, in combination with a feeder- 25 block formed of a series of parallel plates with interposed rows of sharp-pointed needles, or

the like, with their points projecting beyond the plates, the plates and needles soldered or otherwise rigidly united into a solid block, 30 substantially as described.

99. A feeder-block built up of a series of parallel plates arranged side by side and rigidly confined together and having side recesses or seats, and rows of needles in said 35 recesses at the sides of the plates and rigidly united thereto by solder or otherwise so that rows of points are formed at one face of the block, substantially as described.

100. A feeder-block composed of a series of 40 parallel plates arranged on edge and inclined, and rows of needles, or the like, arranged longitudinally between the plates with their points projecting at the ends thereof, the needles and plates all rigidly secured together, 45 substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in the presence of two subscribing witnesses.

WILLIAM BARRY.

Witnesses:

THOMAS P. KINGSFORD,
EPHRAIM M. WILKINSON.